CHAPTER 2 - AIRPORT INVENTORY

An initial step in the master planning process was to inventory the physical, operational, and functional characteristics of the Airport and its immediate environs. The inventory information presented in this chapter provides the basis for evaluating existing facilities at San Antonio International Airport and subsequently determining future facility needs. The information is presented in four sections: (1) Airport History, (2) Airport Role, (3) Existing Airport Facilities, and (4) Environmental Conditions.

2.1 AIRPORT HISTORY

In 1941, the City of San Antonio purchased 1,200 acres of undeveloped land north of the City limits on which to develop the new San Antonio Municipal Airport. Seven decades later, the Airport has doubled in size to 2,600 acres and is called San Antonio International Airport.

In 1951, construction began on a new terminal (the current Terminal 2) designed to bring the Airport up to modern standards. The terminal was completed in 1953 and is still in operation today. Completed in the same year were an FAA Airport Traffic Control Tower (ATCT) and a baggage claim area.

Six years later, the east and west wings were added onto Terminal 2. Then, in 1968, in anticipation of the World's Fair to be held in San Antonio, a new concourse with eight contact gates was constructed. Airport records show that, by the end of the decade, more than 848,000 passengers had boarded aircraft at SAT.

In 1975, City Council members adopted an Airport Master Plan for the orderly development of Airport facilities through 2000. Master Plan recommendations included the construction of a new 1,300 space tri-level parking garage and a new 360,000-square-foot terminal. Terminal 1 was opened to the public in 1984 and it brought the Airport's capacity to 28 gates. In 1986, the expansion continued with a new FAA ATCT at a new location. Less than two decades after the World's Fair, the number of passengers enplaned at SAT surpassed 2 million.

In 1994, a second Master Plan was prepared to review the demand the Airport would face in the 21st century. In 1997, a $33 million long-term parking expansion project brought the total inventory of short- and long-term spaces to approximately 6,000. Approximately 3,000 additional spaces were added in 2008. A Terminal Renovation and Concession Redevelopment Plan was completed and the U.S. 281 North Connector was opened, which provided direct elevated access from U.S. 281 North to the terminal and parking facilities at SAT. A new terminal (Terminal B) is currently under construction to replace Terminal 2. Following the commissioning of Terminal B, Terminal 1 will be renamed Terminal A.

2.2 AIRPORT ROLE

SAT is the primary commercial service airport serving the air transportation needs of the people and businesses in and around the San Antonio region. The San Antonio Airport System is operated by the City of San Antonio's Aviation Department. The Aviation Department employs approximately 500 people to support the 24-hour operation of both SAT and Stinson Municipal Airport (SSF). Airport operations and improvements at SAT are paid for by user fees, bond proceeds, and money from the Aviation Trust Fund, which is disbursed by the Federal Aviation

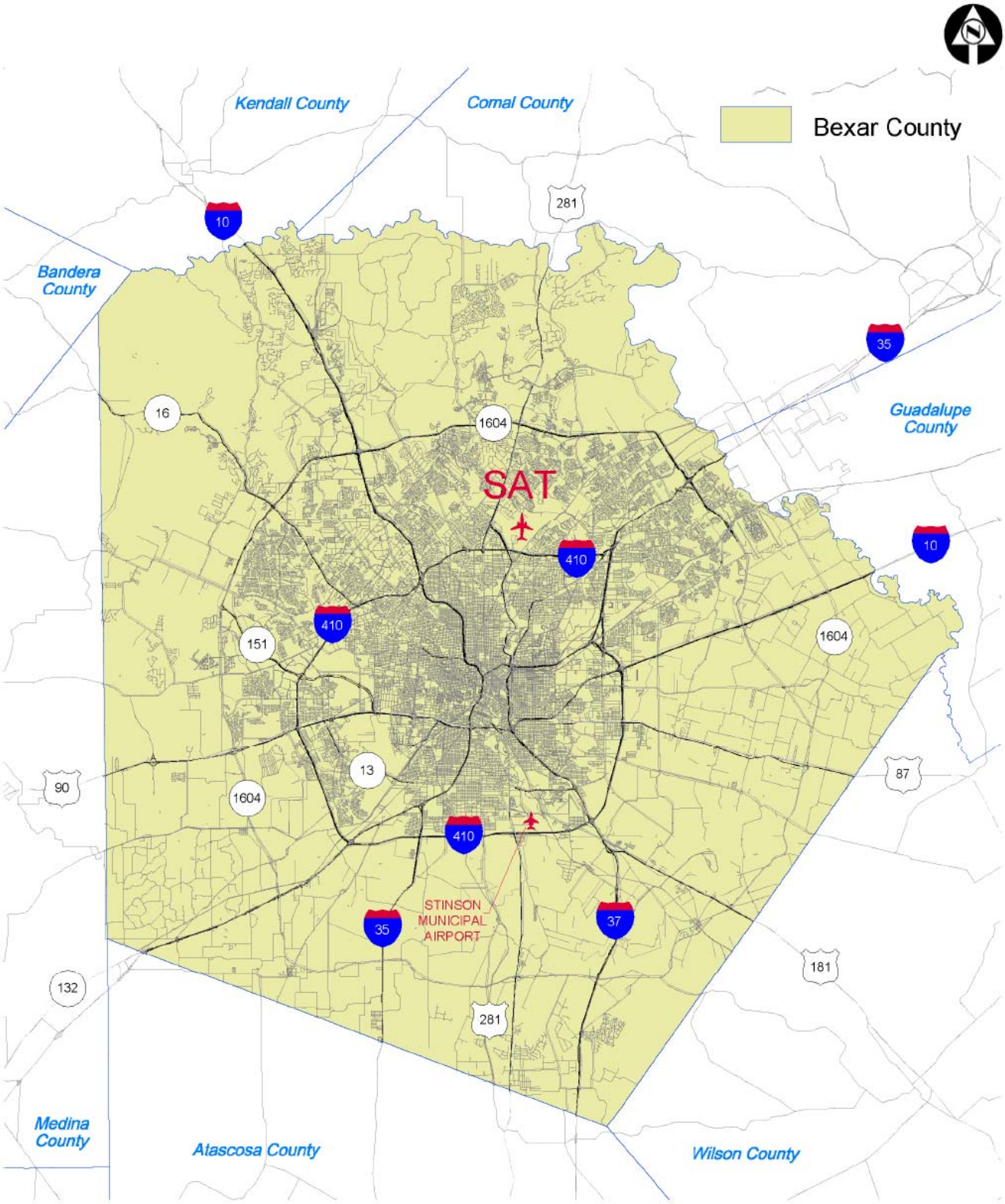
Administration (FAA). Although the Airport is located within the City's jurisdiction, other municipal jurisdictions and military bases (Randolph Air Force Base and Lackland Air Force Base) are located in close proximity to the Airport. These other jurisdictions and military installations are self-governing entities with laws and ordinances separate from those of the City of San Antonio.

In 2008, SAT served nearly 4.2 million passengers and more than 216,000 total aircraft operations. The Airport is vitally important to the prosperity of the region and links the City of San Antonio to the rest of the United States and the world. The services provided at SAT facilitate the movement of people and products, and help ensure that the region remains competitive in the global marketplace. With this in mind, the City of San Antonio is moving forward with focused planning efforts for the Airport System to ensure that the aviation needs of the region are met through 2050.

2.2.1 Airport Locale

SAT is located in northern San Antonio, approximately seven miles or 15 minutes from the downtown area and is at a field elevation of 809 feet above mean sea level (MSL). Loop 410 and U.S. 281 provide highway access to the Airport's main entry points. The Airport encompasses 2,600 acres. **Figure 2-1** shows the location of SAT in relation to the surrounding area.

Figure 2-1: Airport Location Map



2.2.2 Land Use

On-Airport Land Use

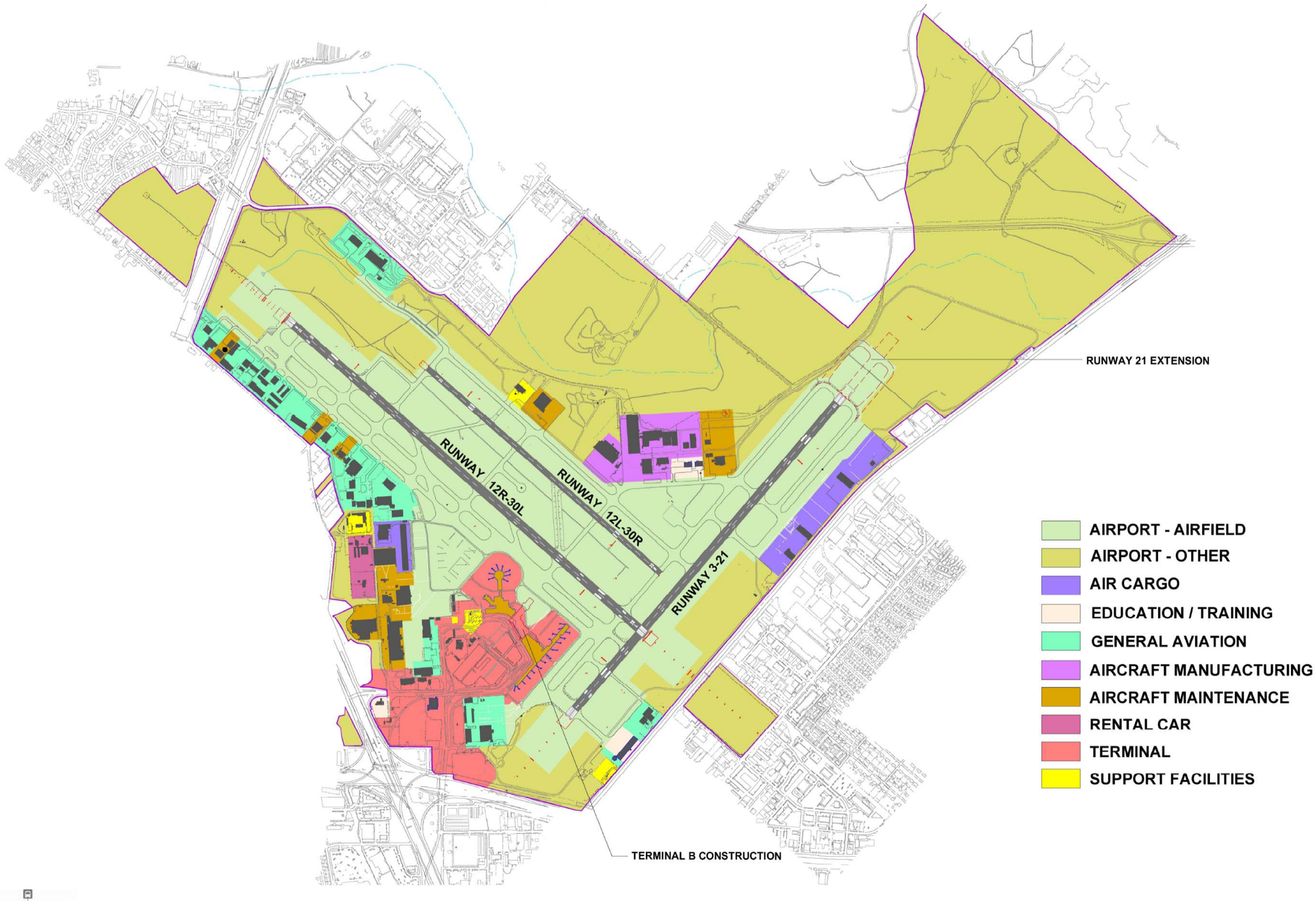
Existing on-Airport land uses are depicted on **Figure 2-2**. The use of Airport land by functional designation is defined below and the acreage is summarized in **Table 2-1**.

- **Airfield** – Runways, taxiways, aprons, and safety areas directly related to the movement of aircraft.
- **Passenger Terminal** – Passenger terminal, concourse buildings, and other landside facilities, including curbside and vehicle parking.
- **Air Cargo** – Areas used and dedicated to the movement, distribution, and delivery of cargo.
- **Airline and Airport Support** – Facilities associated with, but not part of, the passenger terminal, including: rental cars, airline catering, ground support equipment, employee parking, etc.
- **General Aviation** – Corporate user facilities and fixed base operator (FBO) and aircraft service areas where services are provided to general aviation users; includes hangars, parking aprons, offices, fuel storage, etc.
- **Aircraft Maintenance** – Facilities used and dedicated to aircraft maintenance and repair activities.
- **Aircraft Manufacturing** – Areas used for aircraft manufacturing facilities north of the airfield.
- **Rental Car** – Facilities used for rental car ready/return, support and storage facilities
- **Education/Training** – Flight schools and other aeronautical educational facilities.

Table 2-1: Existing Airport Land Use

Existing Land Use	Area (acres)	Percent of Total
Airfield	741	31%
Passenger Terminal	143	6%
Air Cargo	42	2%
Airline and Airport Support	22	1%
General Aviation	95	4%
Aircraft Maintenance	69	3%
Aircraft Manufacturing	43	2%
Rental Car	11	>1%
Education/Training	13	1%
Other	1,196	50%
Total	**2,375**	**100%**

Figure 2-2: On-Airport Land Uses



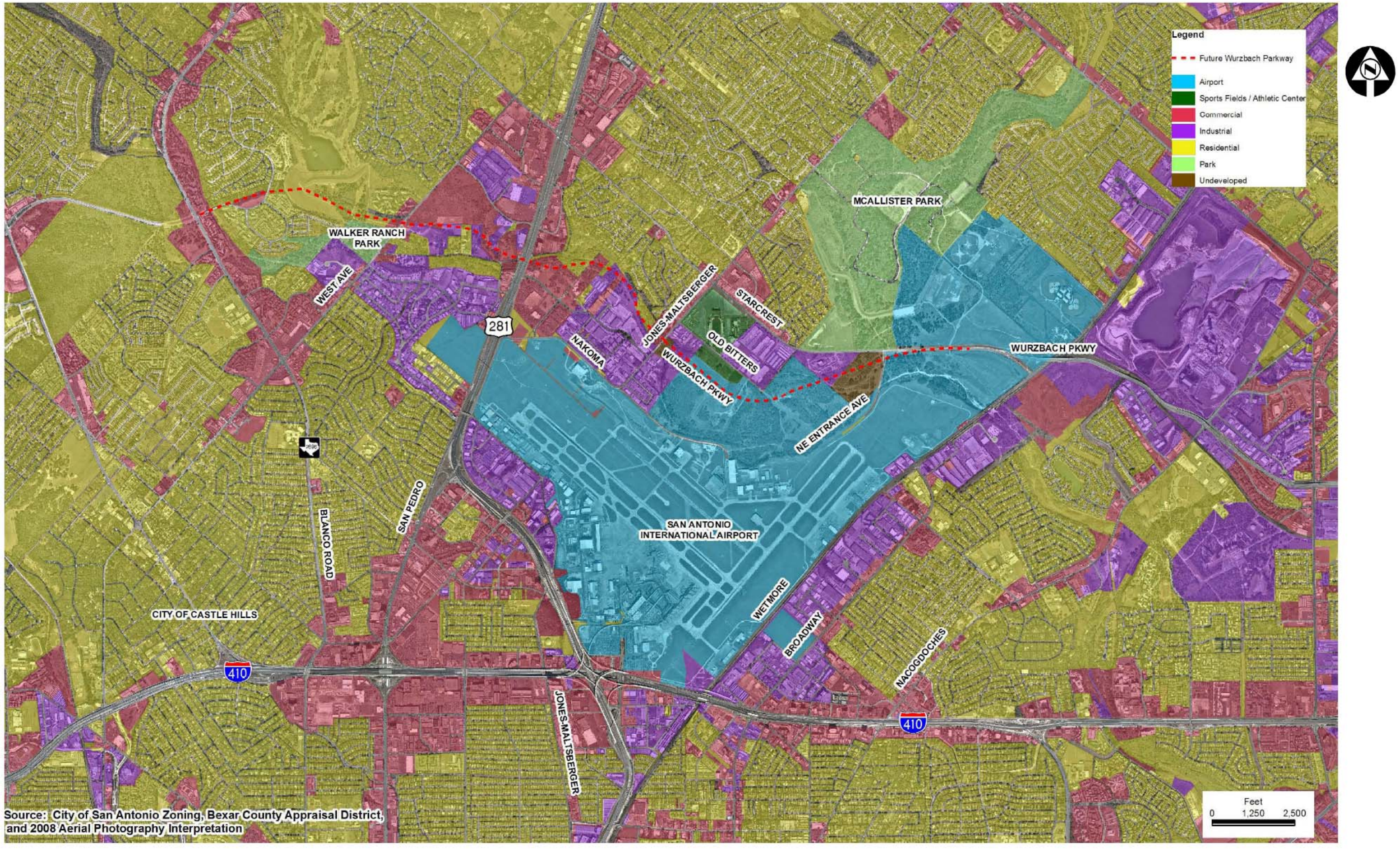
Existing Off-Airport Land Uses

Generalized existing land uses in the Airport environs are depicted on **Figure 2-3**. Land uses surrounding the Airport are primarily a mix of commercial, industrial, and residential development. In the surrounding community to the east, land use is predominantly single family residential, with multifamily residential areas along corridors and industrial uses at the boundary with the Airport between Broadway Street and Wetmore Road. The area immediately south of the Airport is predominantly commercial and light industrial along Loop 410. Areas west of the Airport and west of U.S. 281 are primarily residential, with commercial development along corridors, such as Blanco Road. Areas north of the Airport are a mix of commercial, industrial, and recreational areas, including McAllister Park.

Future Off-Airport Land Uses

Future off-Airport land uses will be defined when the draft report *San Antonio International Airport Vicinity Land Use Plan*, dated July 2009, is finalized by City Council adoption. The draft report identifies preferred development for the area surrounding the Airport to best meet the Land Use Plan objectives, which were to "protect the quality of life of residents including health, safety and welfare" and to "encourage economic growth that enhances airport operations and surrounding development." The primary recommendations in the draft report include the creation of business parks in the immediate vicinity of the Airport between Wetmore Road and Broadway Street, between U.S. 281 and East Ramsey Road, and along West Rhapsody Drive and West Nakoma Drive northwest of the Airport. Planned land uses in the rest of the area are unchanged compared to existing conditions.

Figure 2-3: Existing Off-Airport Land Uses



2.3 EXISTING AIRPORT FACILITIES

The following sections describe the facilities at SAT. **Figures 2-4** through **2-8** provide an overview of existing facilities at the Airport.

2.3.1 Airfield Facilities and Airport Operations

The airfield is the second largest land use on Airport property. It encompasses runways, taxiways, airfield lighting, navigational aids and safety areas. These facilities are discussed below and depicted on **Figure 2-9**.

Runways

The Airport has three runways. Two runways are oriented in the northwest-southeast direction: Runway 12R-30L, the Airport's primary runway, measures 8,502 feet long and 150 feet wide; Runway 12L-30R, primarily used for general aviation traffic, measures 5,519 feet long and 100 feet wide. Crosswind Runway 3-21, oriented in the northeast-southwest direction, measures 7,505 feet long and 150 feet wide. **Table 2-2** provides additional data on SAT's runways.

The FAA classifies airports for design purposes based on the Airport Reference Code (ARC). The ARC consists of two aircraft characteristics that govern the dimensions of airfield facilities and the associated design surfaces. The first component of the ARC is a letter that references the aircraft approach category; it indicates the maximum approach speed of the aircraft that the runway is designed to accommodate. The second component of the ARC is a Roman numeral that references the Airplane Design Group (ADG), which indicates the maximum aircraft wingspan a runway is designed to accommodate. Currently, the Airport meets ARC D-IV criteria, which means that it can accommodate aircraft with approach speeds up to 166 knots and wingspans up to 171 feet.

Runways 12R, 30L, 3, and 21 are striped as precision instrument runways with centerline, runway designation, threshold, fixed distance, and touchdown zone markings; holding position markings on intersecting taxiways; and side stripes. Of these, Runway 21 does not currently have a precision instrument approach. However, a runway may have additional markings typically required for a higher runway classification.

Runways 12L and 30R are marked as nonprecision and visual approach runways in excess of 4,000 feet long used by general aviation aircraft. These markings include centerline, runway designation, threshold, and fixed distance markings and holding position markings on intersecting taxiways.

The City is currently extending Runway 3-21 and Taxiways N and Q 1,000 feet to the north. This runway and taxiway extension project includes the relocation of facilities on or adjacent to the airfield that are affected by the extensions. These facilities include the perimeter road, security fencing, FAA navigational aids, utilities, and the NE Entrance Road.

Figure 2-4: Existing Airport Facilities

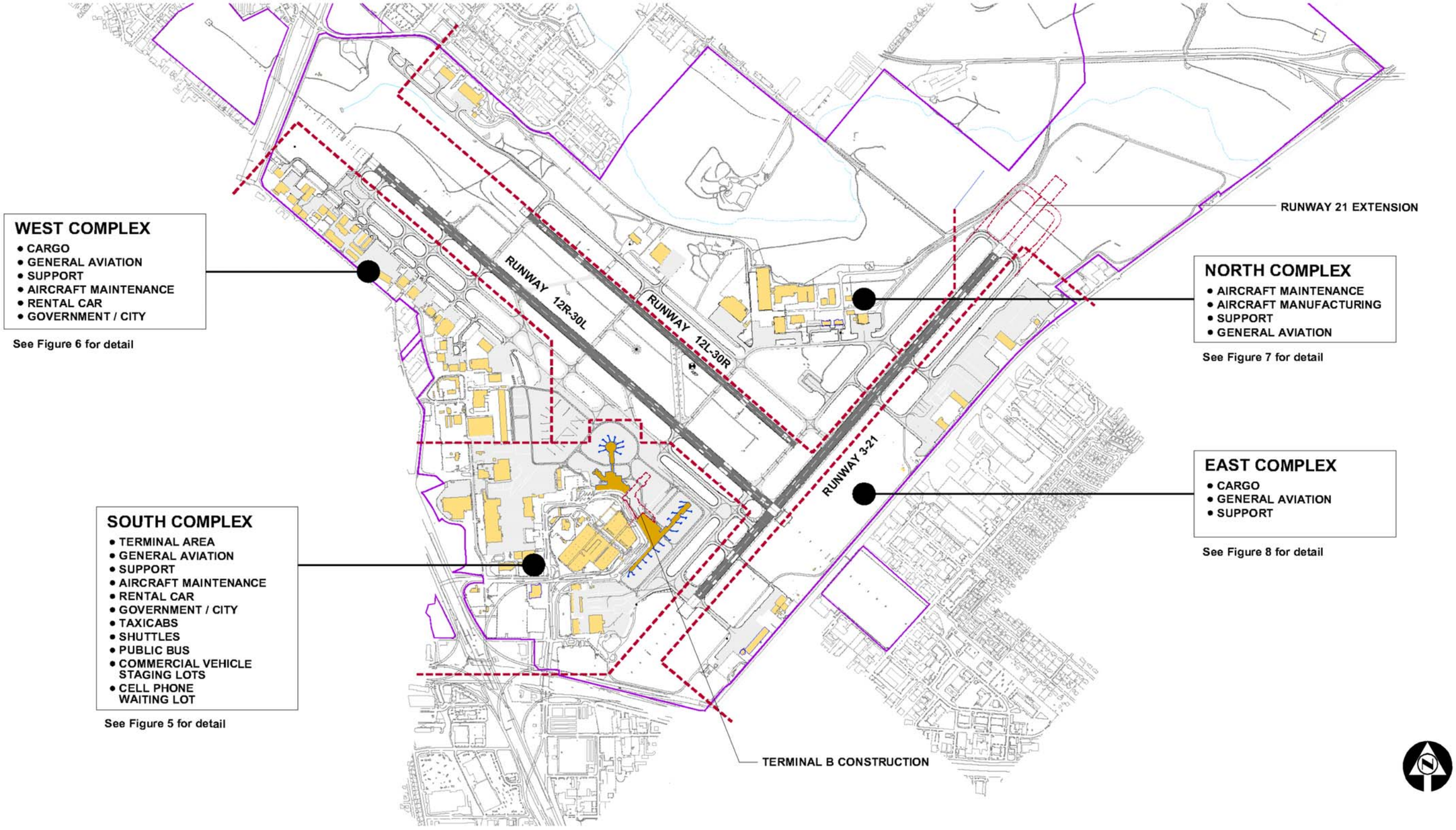


Figure 2-5: Existing Airport Facilities – South Complex

BLDG. I.D.	DESCRIPTION
1180	(VACANT)
1181	(VACANT)
1182	(VACANT)
1220	SAN ANTONIO AEROSPACE
1226	SAN ANTONIO AEROSPACE
1230	SAN ANTONIO AEROSPACE
1231	SAN ANTONIO AEROSPACE
1232	SAN ANTONIO AEROSPACE
1235	SAN ANTONIO AEROSPACE
1250	AVIS RENTAL CAR
1251	AVIS RENTAL CAR
1254	PARKING SUPPORT FACILITY
1290	FLIGHT SAFETY
1312	STARGAZER
1318	(VACANT)
1320	(VACANT)
1322	(VACANT)
1340	TERMINAL 2
1350	TERMINAL B CONSTRUCTION TRAILER AREA
1360	AIRPORT TRAFFIC CONTROL TOWER
1361	PARKING TOLL PLAZA
1362	PARKING OPERATIONS ADMINISTRATION
1370	TERMINAL 1
1390	PARKING GARAGE
1398	CENTRAL PLANT
1400	CITY OF SAN ANTONIO
1401	CITY OF SAN ANTONIO
1424	SILVER VENTURES
1425	NAYAK
1426	NAYAK
1430	NAYAK
2402	TRITURATOR
2403	CITY OF SAN ANTONIO
2256	PARKING SUPPORT FACILITY
2391	PARKING GARAGE

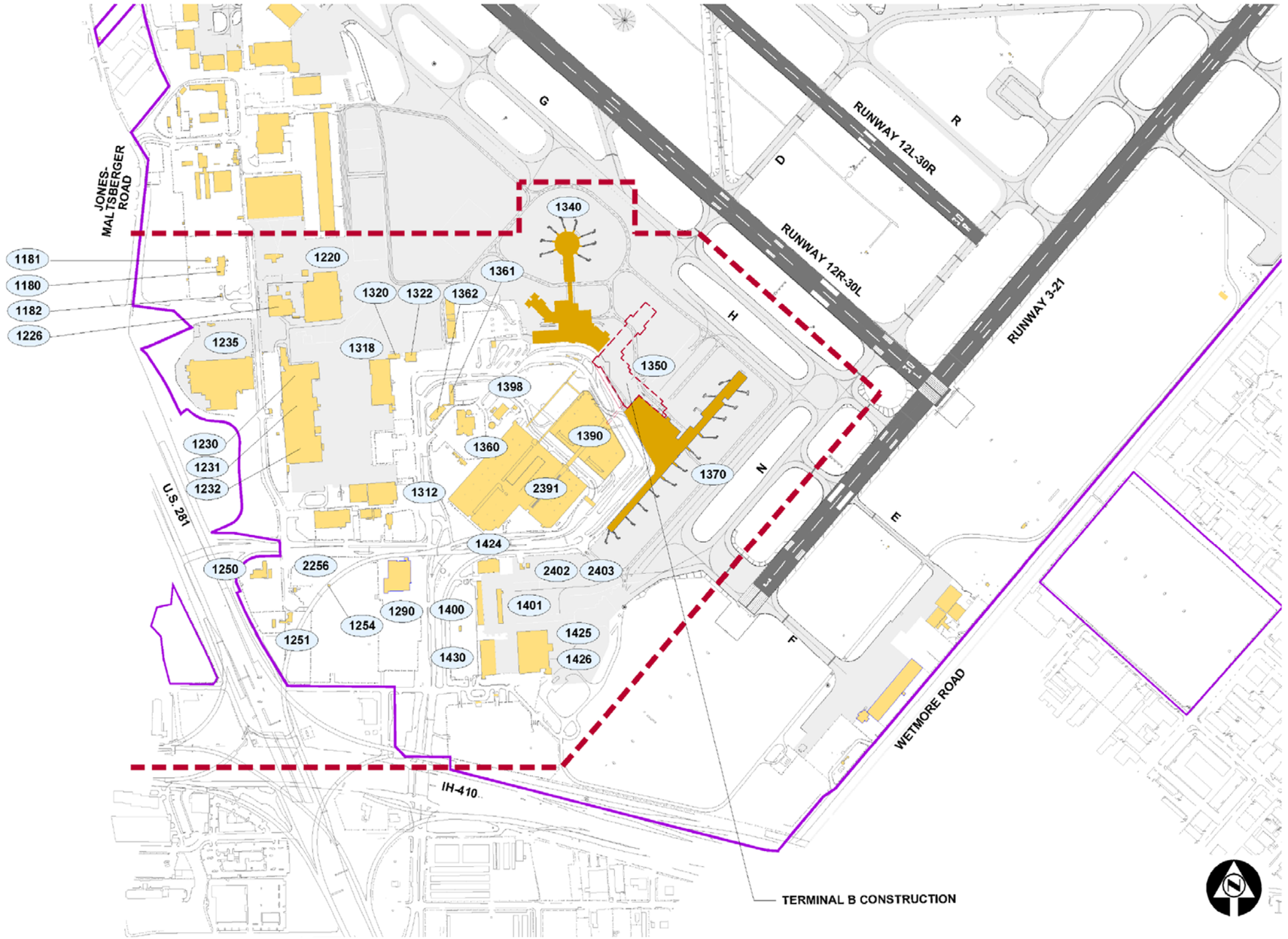


Figure 2-6: Existing Airport Facilities – West Complex

BLDG. I.D.	DESCRIPTION
1010	CLEAR CHANNEL
1020	CUTTER AVIATION
1021	CUTTER AVIATION
1030	SECURITY AIRPARK
1031	SECURITY AIRPARK
1032	SECURITY AIRPARK
1033	SECURITY AIRPARK
1034	SECURITY AIRPARK
1035	SECURITY AIRPARK
1039	NON-AVIATION TENANT
1041	SECURITY AIRPARK
1042	SECURITY AIRPARK
1043	SECURITY AIRPARK
1044	SECURITY AIRPARK
1045	SECURITY AIRPARK
1046	SECURITY AIRPARK
1047	SECURITY AIRPARK
1048	SECURITY AIRPARK
1049	SECURITY AIRPARK
1050	LANDMARK AVIATION
1060	AHR AVIATION
1070	USAA
1080	SIGNATURE FLIGHT SUPPORT
1085	HAWKER BEECHCRAFT
1086	HAWKER BEECHCRAFT
1087	HAWKER BEECHCRAFT
1088	HAWKER BEECHCRAFT
1090	SIGNATURE FLIGHT SUPPORT
1095	SIGNATURE FLIGHT SUPPORT
1100	LEWIS ENERGY
1110	H.B. ZACHRY
1120	HOLT AVIATION
1130	HOLT AVIATION
1140	AERO-NEV
1150	AMF AIRPORT MAINTENANCE
1151	AMF AIRPORT MAINTENANCE
1152	AMF AIRPORT MAINTENANCE
1153	AMF AIRPORT MAINTENANCE
1154	AMF AIRPORT MAINTENANCE
1155	AMF AIRPORT MAINTENANCE
1200	U.S. POSTAL SERVICE
1208	SAN ANTONIO AEROSPACE
1210	WEST AIR CARGO TERMINAL
2009	NUSTAR
2036	U.S. CUSTOMS
2038	U.S. CUSTOMS
2083	HAWKER BEECHCRAFT
2084	HAWKER BEECHCRAFT
2157	AMF AIRPORT MAINTENANCE

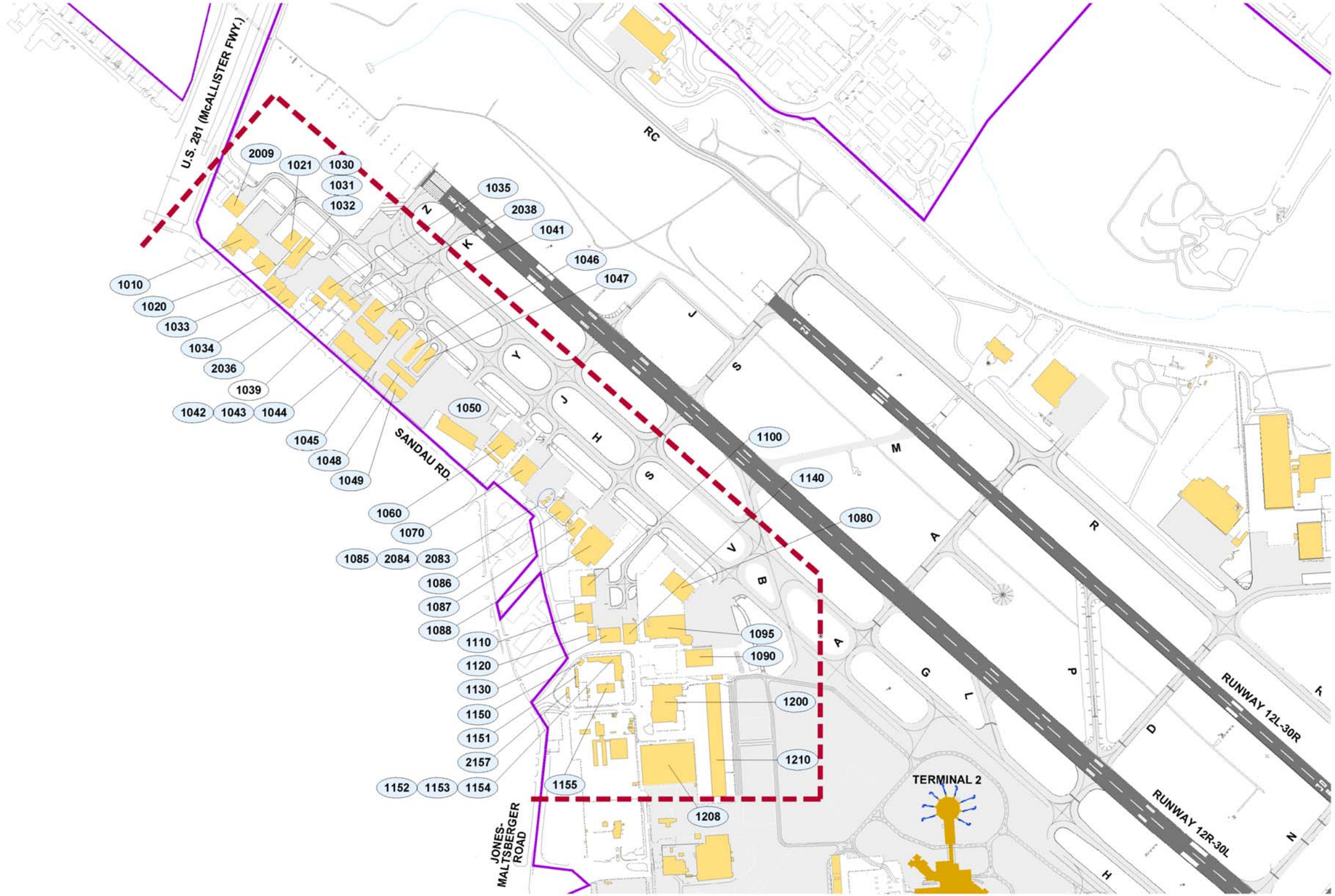


Figure 2-7: Existing Airport Facilities – North Complex

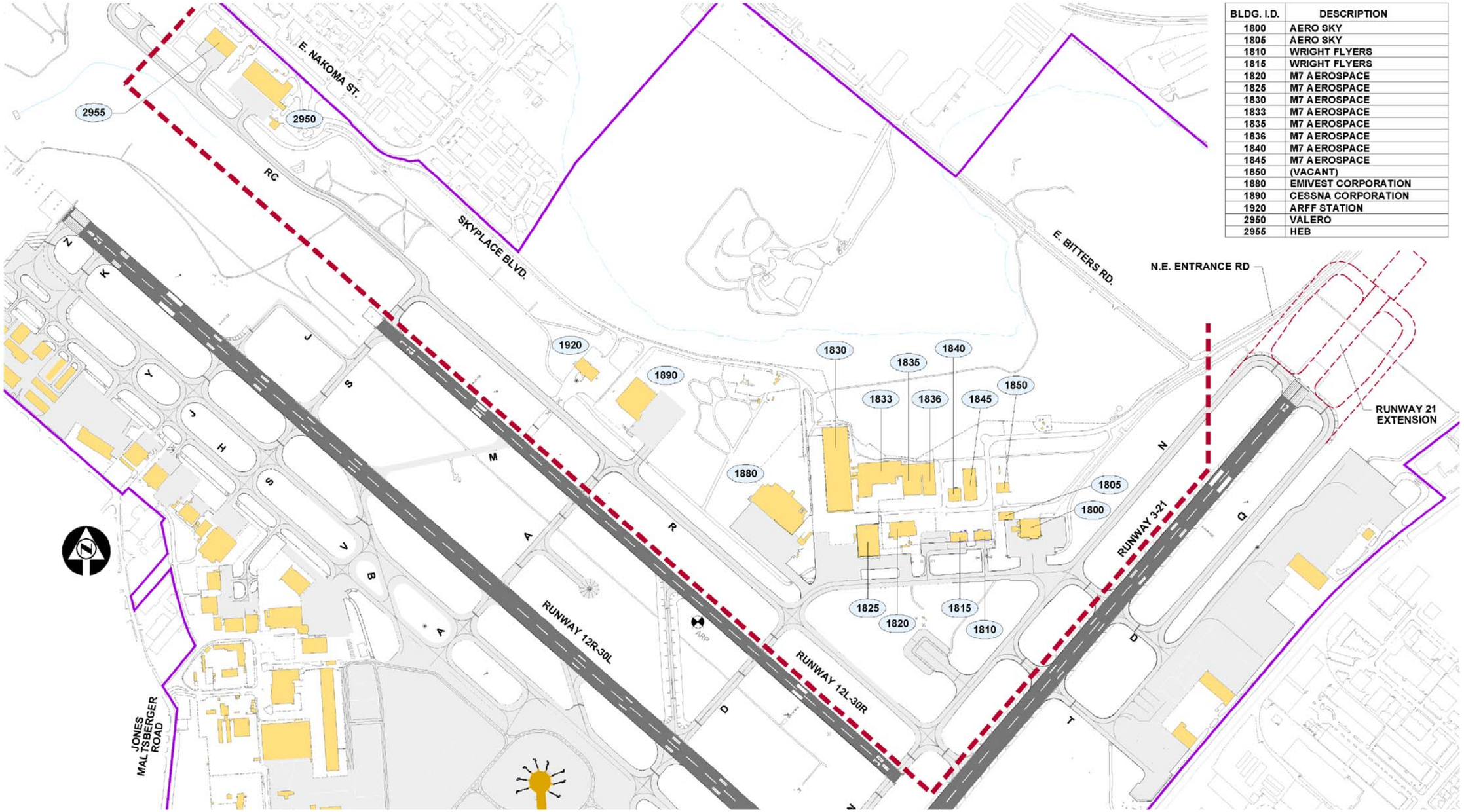
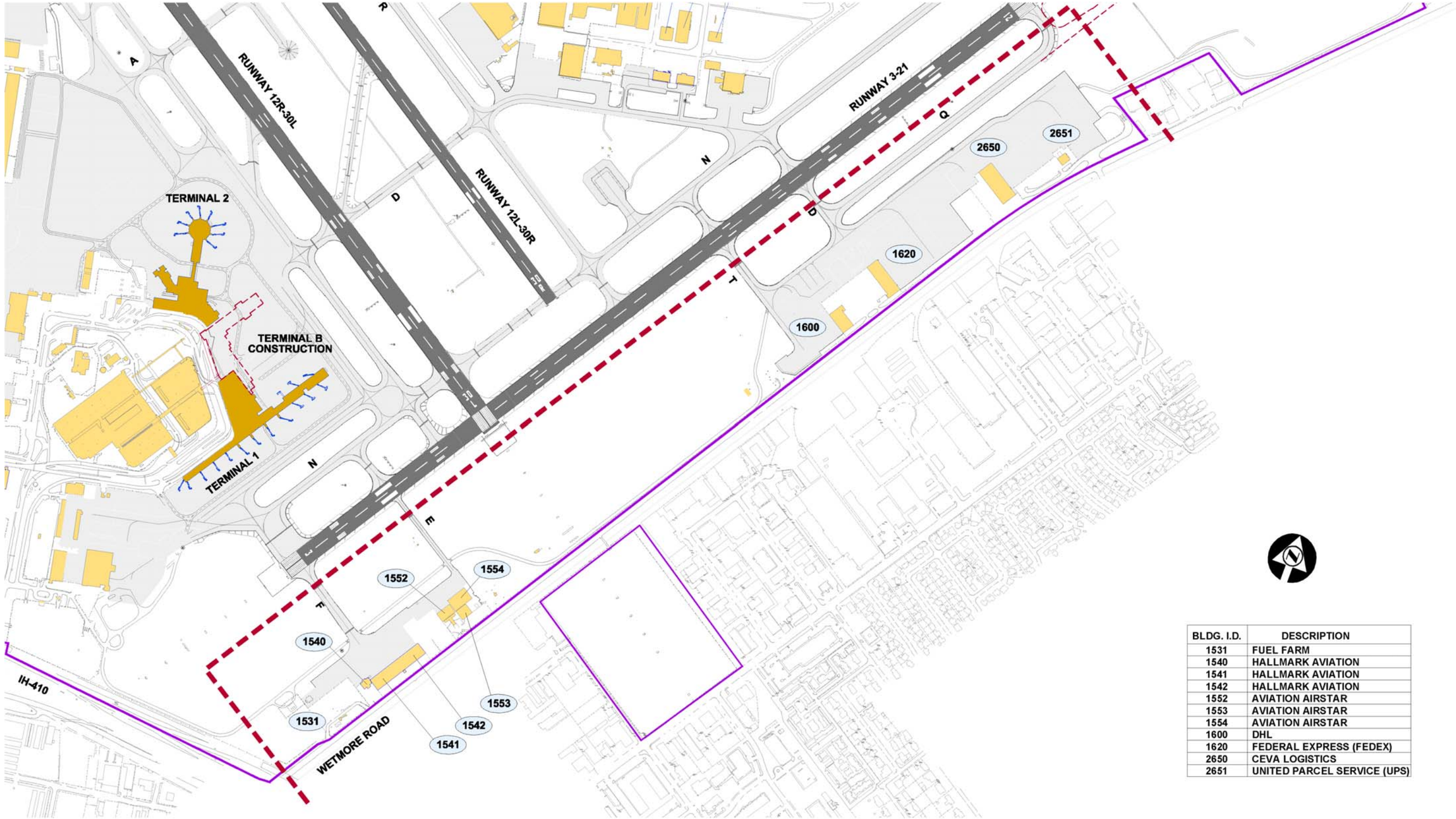


Figure 2-8: Existing Airport Facilities – East Complex



BLDG. I.D.	DESCRIPTION
1531	FUEL FARM
1540	HALLMARK AVIATION
1541	HALLMARK AVIATION
1542	HALLMARK AVIATION
1552	AVIATION AIRSTAR
1553	AVIATION AIRSTAR
1554	AVIATION AIRSTAR
1600	DHL
1620	FEDERAL EXPRESS (FEDEX)
2650	CEVA LOGISTICS
2651	UNITED PARCEL SERVICE (UPS)

Figure 2-9: Existing Airfield Facilities

Table 2-2: Runway Data Summary

	Runway		Runway		Runway	
	12L	30R	12R	30L	3	21
Length (feet)	5,519	5,519	8,502	8,502	7,505[1]	7,505[1]
Width (feet)	100		150		150	
Runway Category	B-III		D-IV		D-IV	
Displaced Threshold (feet)	0	0	0	0	0	0
Landing Length (feet)	5,519	5,519	8,502	8,502	7,505[1]	7,505[1]
Effective Gradient	0.3%		0.4%		0.3%	
Pavement Type	Asphalt		Concrete		Concrete	
Pavement Strength (pounds)	Single Wheel – 59,000 Dual Wheel – 120,000 Dual Tandem – N/A		Single Wheel – 95,000 Dual Wheel – 190,000 Dual Tandem – 270,000		Single Wheel – 95,000 Dual Wheel – 190,000 Dual Tandem – 270,000	
Approach Surfaces	20:1	20:1	50:1	50:1	50:1	34:1
Runway Pavement Markings	Non-Precision	Basic	Precision Instrument			
Landing Aids	REIL PAPI MIRL	REIL PAPI MIRL	ALSF-II TDZ PAPI RCL HIRL	MALSR PAPI RCL HIRL	MALS PAPI RCL HIRL	REIL PAPI RCL HIRL

ALSF-II – High Intensity Approach Lighting System with Sequenced Flashing Lights, Category II
HIRL – High Intensity Runway Lights
MALSR – Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
MIRL – Medium Intensity Runway Lights
PAPI – Precision Approach Path Indicator
RCL – Runway Centerline Lights
REIL Runway End Identifier Lights
TDZ – Touchdown Zone
[1] Runway extension completion date expected in late 2011 (8,505 feet)

Taxiways

The taxiway system is designated by letters. Taxiways G, H, and R serve as parallel taxiways for Runways 12L-30R and 12R-30L. Taxiway N is a full-length parallel taxiway for Runway 3-21.

All taxiways are 75 feet wide except Taxiway E (east of Runway 3-21), Taxiway H (west of Taxiway Z), Taxiway J (south of Taxiway H and between Runway 12R-30L and Taxiway S), Taxiway K (south of Taxiway H), Taxiway S (south of Taxiway H) and Taxiways M, P, RC, and W. These taxiways are 50 feet wide or less and, along with Taxiway A north of Runway 12R-30L, are restricted to aircraft weighing less than 59,000 pounds.

The separation between the runways and parallel taxiways is 400 feet for Runways 12R-30L and 12L-30R and 450 feet for Runway 3-21. These dimensional standards are in accordance with FAA requirements for ADG V aircraft. The separations for the remaining 50-foot-wide taxiways are in accordance with requirements for ADG III aircraft. **Table 2-3** provides separation distances between runway centerlines and adjacent taxiway centerlines. The remaining taxiways serve as entrance, exit, and connecting taxiways for the Airport's runways and to the various landside areas.

Most of the taxiway pavements are concrete, with these exceptions: Taxiways D and J north of Runway 12R-30L, Taxiways A and M between the parallel runways, Taxiway H, and all of the crossover taxiways along Taxiway H west of Taxiway B and south of Taxiway G have asphalt pavements.

The taxiway system is continuously marked with a centerline, except at the runway intersections. Taxiway was initially 160 feet wide, but only the center 40-foot-wide portion has been maintained. The remainder of this taxiway is marked with transverse stripes as a stabilized area.

Taxiway RC is being extended 1,000 feet to the northwest. This taxiway extension will provide additional airside access to undeveloped land along East Nakoma Drive from U.S. 281 to Jones Maltsberger Road in support of new tenant development.

Table 2-3: Runway/Taxiway Separations

From Centerline	To Centerline	Centerline Separation (feet)	Approximate Location of Measurement
Runway 12L-30R	Runway 12R-30L	990	Taxiway A
Runway 12L-30R	Taxiway R	400	Taxiway A
Runway 12R-30L	Taxiway G	400	Taxiway A
Runway 3-21	Taxiway N	450	Taxiway D
Runway 3-21	Taxiway Q	400	Taxiway D
Taxiway H	Taxiway G	300	Taxiway J

Source: Airport Layout Plan, January 2009, Ricondo & Associates.

Navigational Aids

The navigational and lighting aids at SAT are described below and their locations are shown on **Figure 2-10**.

The rotating beacon is located north of Taxiway R, abeam Taxiway A. When activated during daylight hours, the beacon signals a ground visibility less than 3 miles and/or a cloud ceiling height less than 1,000 feet.

Table 2-2 identifies the navigational aids available for each runway. Runway edge lights are used to outline the edges of the runways during periods of darkness or reduced visibility.

Runways 12R-30L and 3-21 have high intensity runway lights (HIRL) and centerline lights. In addition, Runway 12R has touchdown zone (TDZ) lights. With the exception of Runways 12L-30R and 21, all of the runways are equipped with an approach lighting system. **Table 2-4** summarizes the existing published instrument approaches at SAT.

Table 2-4: Instrument Approaches

Runway	Type	Minimums*	CAT
12R	ILS or LOC	1,009/18	I
12R	ILS or LOC	909/12	II
12R	RNAV (GPS)	1,107/24	I
30L	ILS or LOC	990/24	I
30L	RNAV (GPS)	1,207/50	I
3	RNAV (GPS)	1,360/2	I
3	ILS or LOC	986/40	I
21[1]	RNAV (GPS)	1,030/1	I

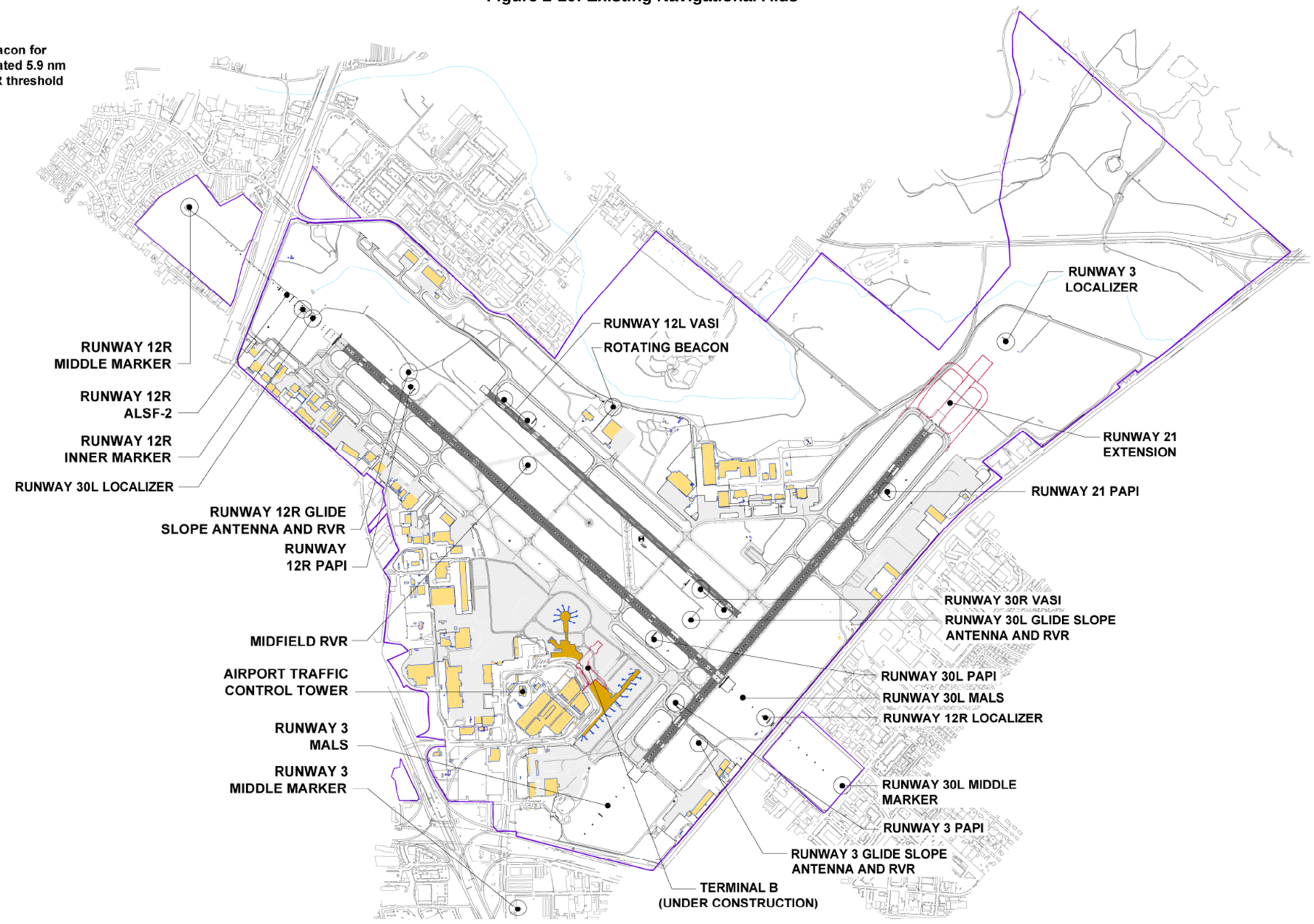
ILS – Instrument Landing System
LOC – Localizer
GPS – Global Positioning System
RNAV – Area Navigation
*Lowest published ceiling (Decision Height, in feet above threshold) and visibility (Statute Miles or RVR), respectively for that approach.
[1] ILS completion date late 2011

The runways at SAT also have visual aids to guide a pilot's approach. All runways are equipped with precision approach path indicators (PAPIs). The Runway 21 PAPI is owned and maintained by the City, while the others are owned and maintained by the FAA.

Airport Surveillance Radar (ASR) is used by the air traffic controllers primarily to identify aircraft positions and provide control instructions to aircraft departing from and arriving at SAT. The ASR is located off-Airport at 1571 Blue Crest Lane.

Figure 2-10: Existing Navigational Aids

NOTE:
Outer Marker beacon for Runway 12R located 5.9 nm from runway 12R threshold



Weather Aids

Weather equipment provides current conditions information to pilots and air traffic controllers to ensure the safe operation of aircraft to and from the Airport. The Automated Surface Observing System (ASOS)/Automated Weather Observing System (AWOS) is located north of Taxiway R near Taxiway A. SAT has a Low Level Windshear Alert System (LLWAS) that warns of windshear conditions. Information is sent to the ATCT, which warns pilots of the situation.

A remote reading hygrothermometer (RRH) provides air temperature and humidity levels and an anemometer measures wind speed and direction. The RRH and anemometer are located in the center of the airfield. Six sensors are located around the Airport, with wind speed and direction measured at the center airfield location.

SAT is also equipped with several remote transmitters/receivers (RTRs). These are unstaffed communication facilities remotely controlled by ATCT personnel to extend the communication range of the ATCT. RTR SATB is located near Building 1540 on Wetmore Road, south of the Runway 30L approach end. RTR SATD is located near Building 1620 on Wetmore Road. RTR SATE is located near the intersection of Taxiway D and Taxiway R. RTR SATF is located near Building 1825. The height of the antennae ranges from 40 to 60 feet.

The Category II (CAT II) approach to Runway 12R includes an Inner Marker (IM) and Runway Visual Range (RVR) sensor. This RVR sensor is also used with the CAT I approach to the Runway 30L end.

The RVR system on Runway 12R-30L consists of three elements: a touchdown RVR, a midpoint RVR, and a rollout RVR. The touchdown RVR provides visibility measurements from runway touchdown zones. The midpoint RVR provides measurements from the midpoint of the runway. The rollout RVR provides measurements near the rollout end of the runway. Runway 3 has only a touchdown RVR.

Airspace and Air Traffic Control

The San Antonio regional airspace consists of all controlled airspace within 40 nautical miles (NM) of SAT laterally and from the Airport surface up to, but not including, 18,000 feet above MSL. This airspace consists of Classes C, D, and E; special use airspace; and other airspace areas.

Figure 2-11 depicts all public, private and military airports in the San Antonio region. The major air carrier airport in the region is San Antonio International Airport. Stinson Municipal Airport is the primary general aviation reliever airport for SAT. Randolph Air Force Base (RND) is a major flight instructor training base for the United States Air Force (USAF). Port San Antonio's Kelly Field (SKF) is operated under a joint-use agreement with Lackland Air Force Base.

Figure 2-11: San Antonio Regional Airspace

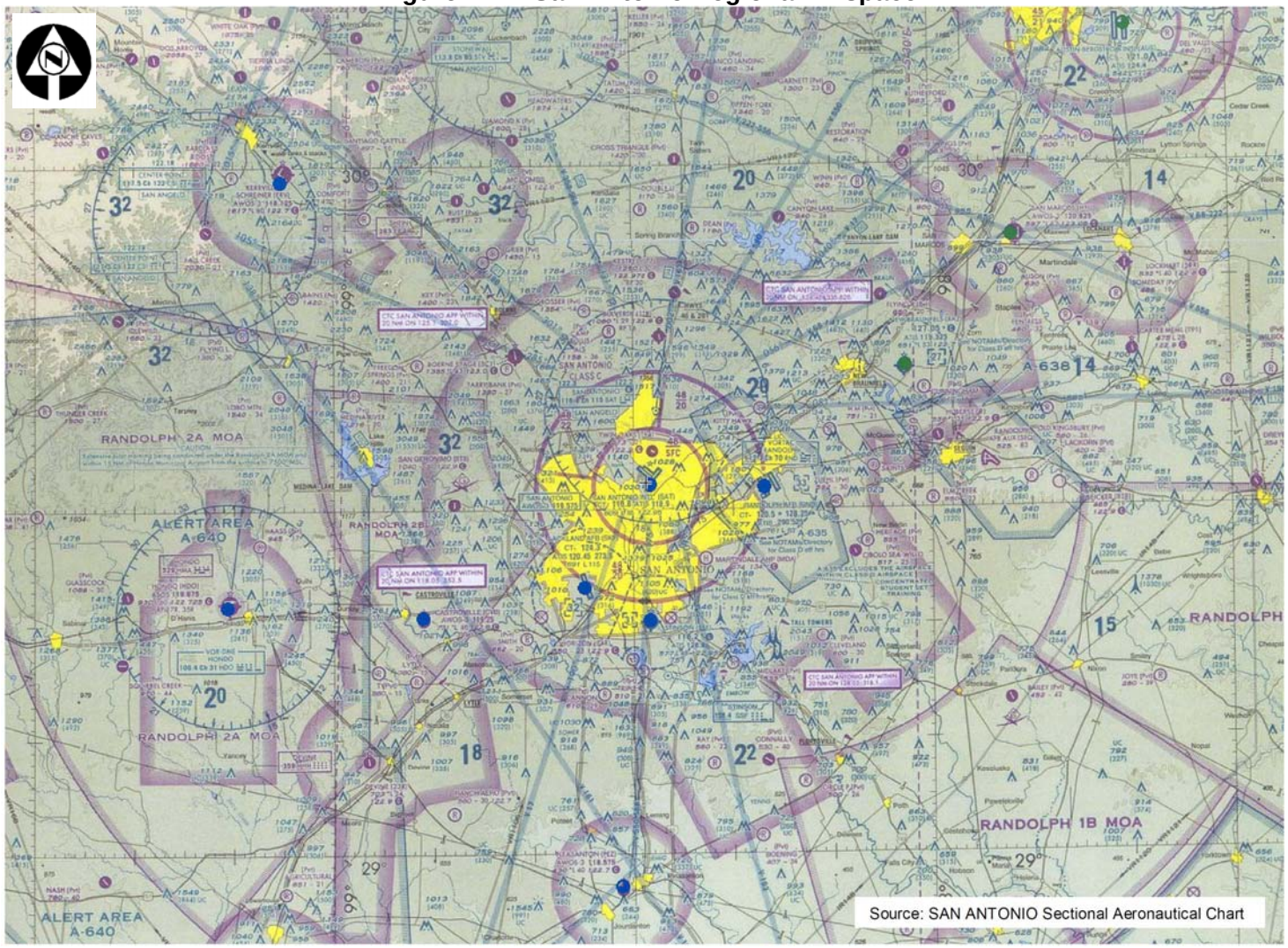


Figure 2-12 shows Class C airspace serving SAT. The SAT ATCT provides radar vectoring and sequencing on a full-time basis for all instrument flight rules (IFR) and visual flight rule (VFR) aircraft operating in SAT's Class C airspace. The Class C airspace consists of two circular areas both centered on SAT. The inner area has a radius of 5 NM and extends vertically from the Airport surface to 4,800 feet above MSL. The outer area has a radius of 10 NM and extends vertically from 2,000 feet above MSL to 4,800 feet above MSL.

Class D airspace serving SKF, SSF, and RND is shown on **Figure 2-13**. The ceilings for this airspace are 3,200 feet above MSL for SKF, 3,100 feet above MSL for SSF; and 3,300 feet above MSL for RND. By design, Class C airspace preempts Class D airspace, which occurs in the overlaps of RND and SSF airspace with that for SAT.

Figure 2-11 shows the low altitude airway system now classified as Class E airspace. Also shown is controlled airspace beginning at 700 feet above ground level (AGL) used to contain IFR operations during terminal operations and while transiting between the terminal and en route airspace environment.

There are four Military Operations Areas (MOAs) in the San Antonio Regional Airspace, all associated with Randolph Air Force Base:

- Randolph 1A: 8,000 feet above MSL to Flight Level (FL)180
- Randolph 1B: 7,000 feet above MSL to FL180
- Randolph 2A: 7,000 feet above MSL to FL180
- Randolph 2B: 14,000 feet above MSL to FL180

All MOAs are operational, at a minimum, between sunrise and sunset, Monday through Friday. They can also be operational at other times with prior coordination with the controlling ATCT facilities.

Alert Areas contain a high volume of pilot training. The vertical extent of these Alert Areas is as follows:

- Alert Area 635: 1,500 feet above MSL to 4,000 feet above MSL
- Alert Area 638: Surface to 3,000 feet above MSL

Figures 2-14 and **2-15** show the locations and the lateral limits of the special airspace structures in the San Antonio area.

Other airspace uses within the San Antonio Regional Area include Military Training Routes (MTRs), which are established for aircraft operation at speeds in excess of 250 knots. MTRs may extend to the surface and their location and characteristics can change every 56 days. MTRs are shown on **Figure 2-16**.

Figure 2-12: Class C Airspace

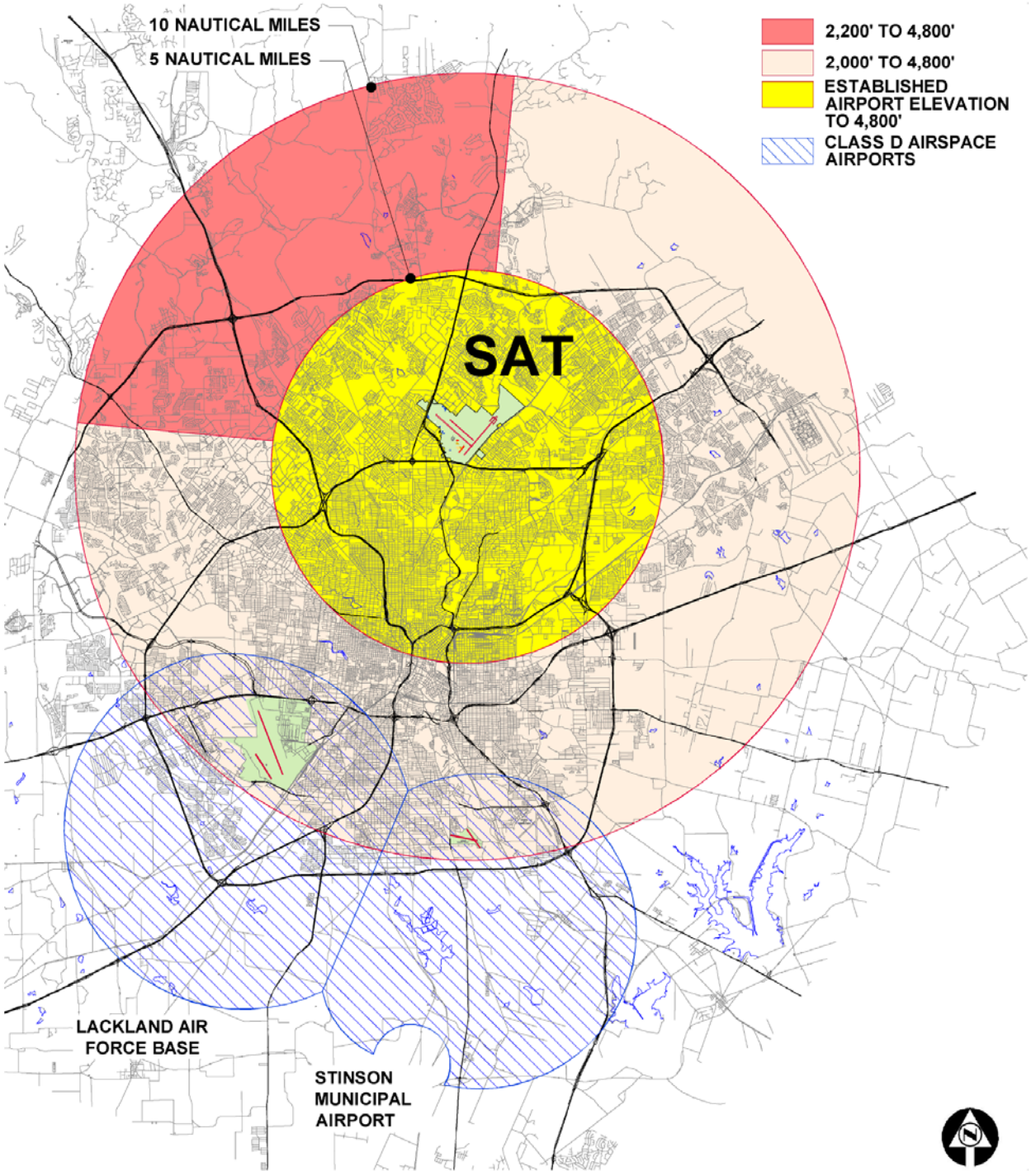


Figure 2-13: Class D Airspace

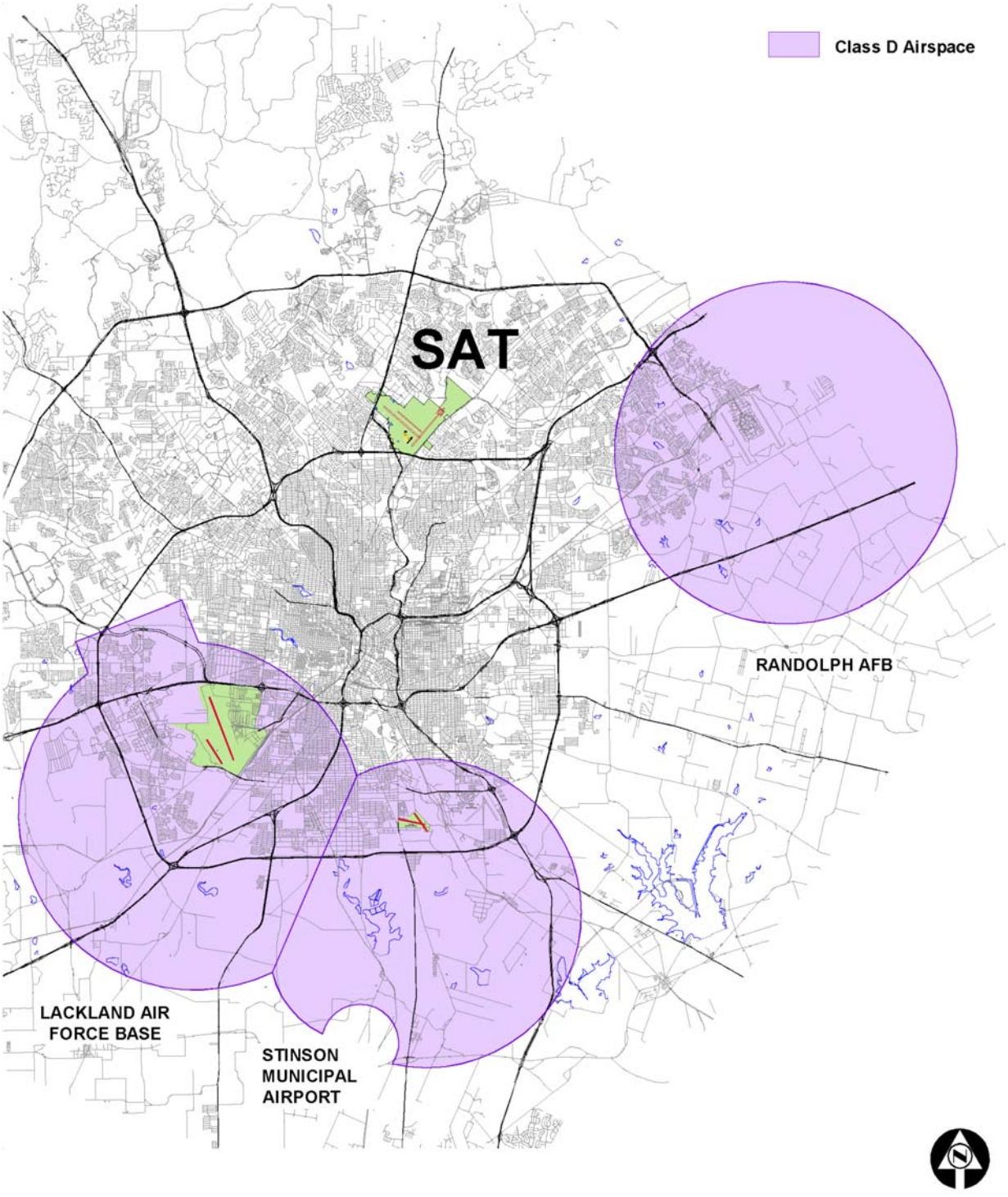


Figure 2-14: Military Operations Areas

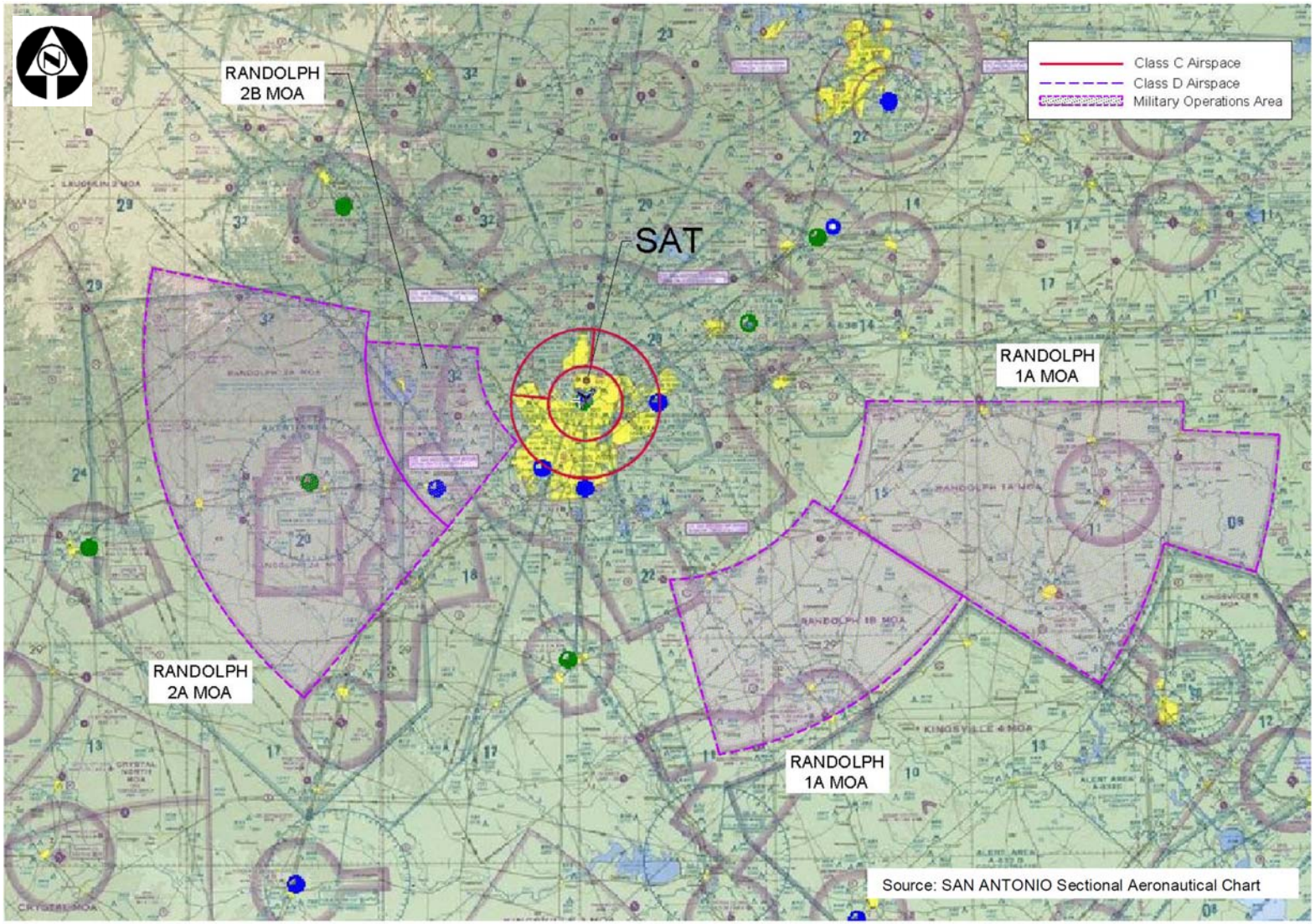


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Figure 2-15: Military Alert Areas

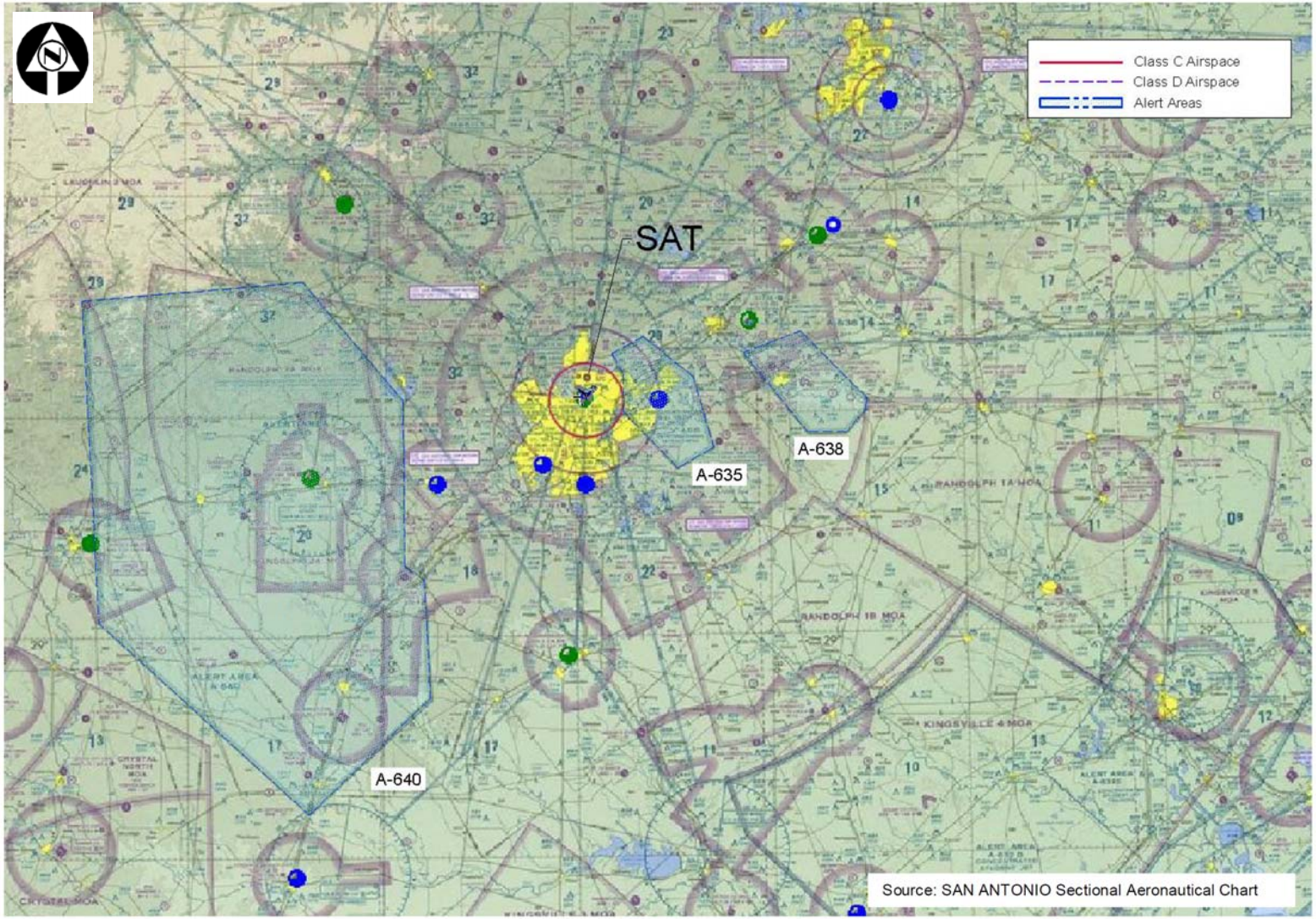
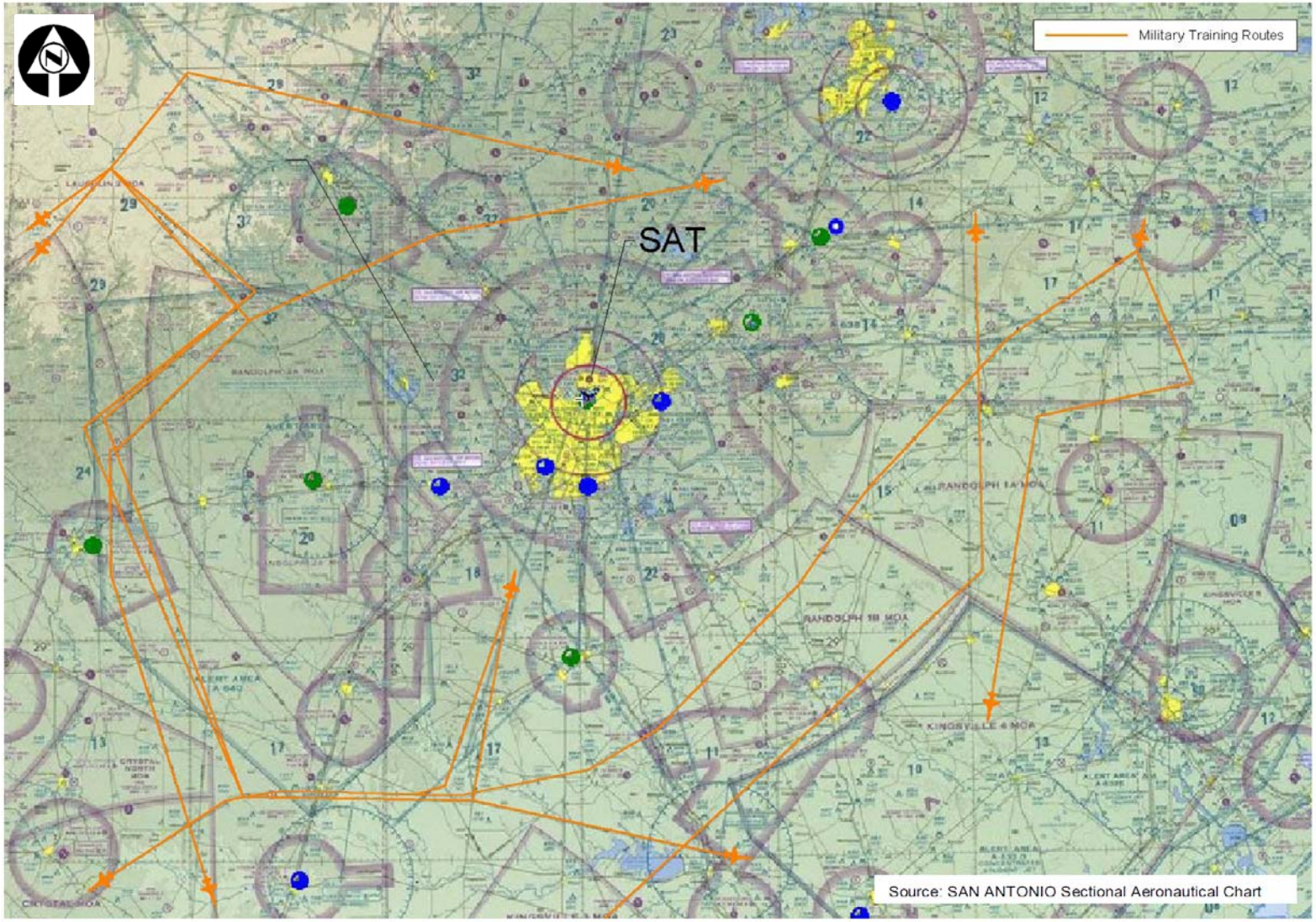


Figure 2-16: Military Training Routes



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SAT is served by an ATCT that has approach control responsibilities. SAT ATCT Approach Control provides separation of IFR aircraft in the terminal area. RND, SSF, and SKF are also served by ATCTs. Additionally, RND has a Radar Monitoring Facility that monitors simultaneous instrument landing system (ILS) approaches. En route air traffic services are provided by the Air Route Traffic Control Center (ARTCC) located in the Houston metropolitan area.

Traffic arriving into the San Antonio region enters via airspace fixes. These airspace fixes are part of the Standard Terminal Arrival Routes (STARs) serving SAT. The MARCS EIGHT Arrival routes traffic to the MARCS intersection; the STONEWALL ONE Arrival routes traffic to the Stonewall (STV) very high frequency omnidirectional range tactical air navigation (VORTAC); the LEMIG ONE Arrival routes traffic to the LEMIG intersection; and the CENTERPOINT ONE Arrival routes traffic to the Centerpoint (CSI) VORTAC. **Figures 2-17** through **2-20** depict Air Traffic Control's preferred routing from these arrival routes to SAT's various runways.

Aircraft depart SAT using one of two departure procedures, which provide transition from the terminal area to the appropriate en route airspace structure. The ALAMO SIX Departure routes traffic north, northeast, and east, while the BOWIE THREE Departure routes traffic to the northwest, southwest, and southeast.

The various military training missions operating in the San Antonio area necessitate special procedures and routes.

Figure 2-17: Preferred Vectored Landing Route – Runway 3

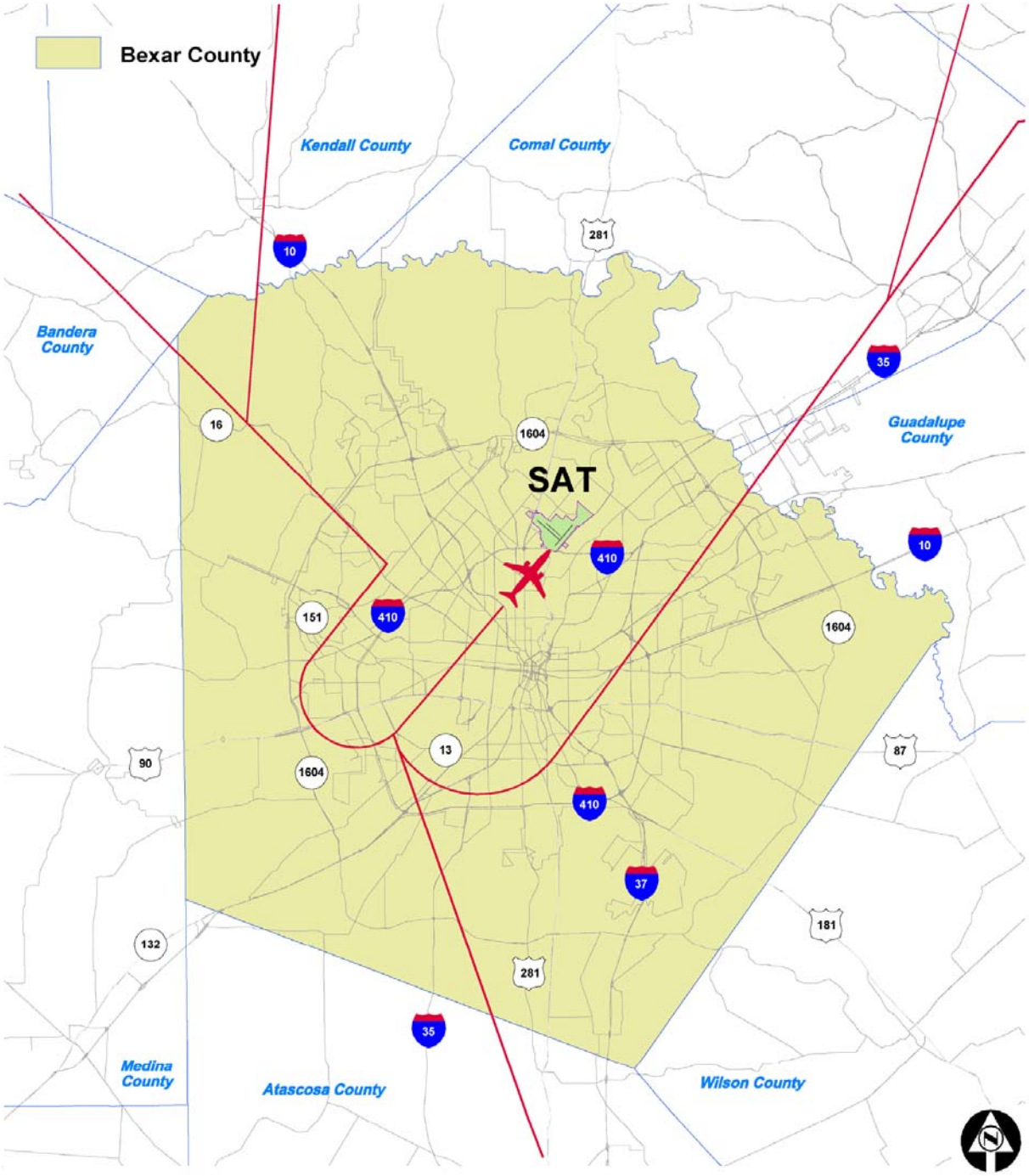


Figure 2-18: Preferred Vectored Landing Route – Runway 21

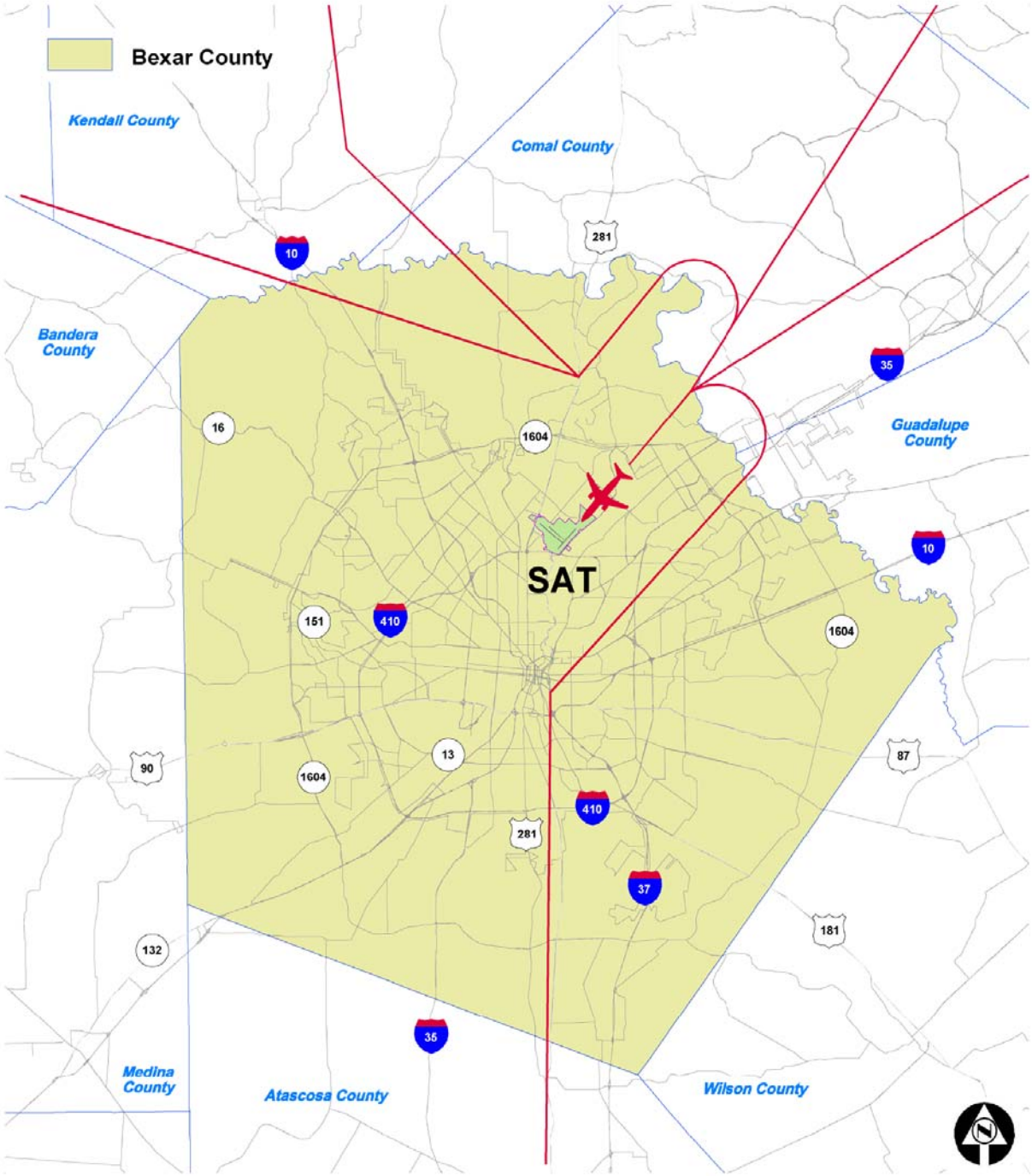


Figure 2-19: Preferred Vectored Landing Route – Runway 12R

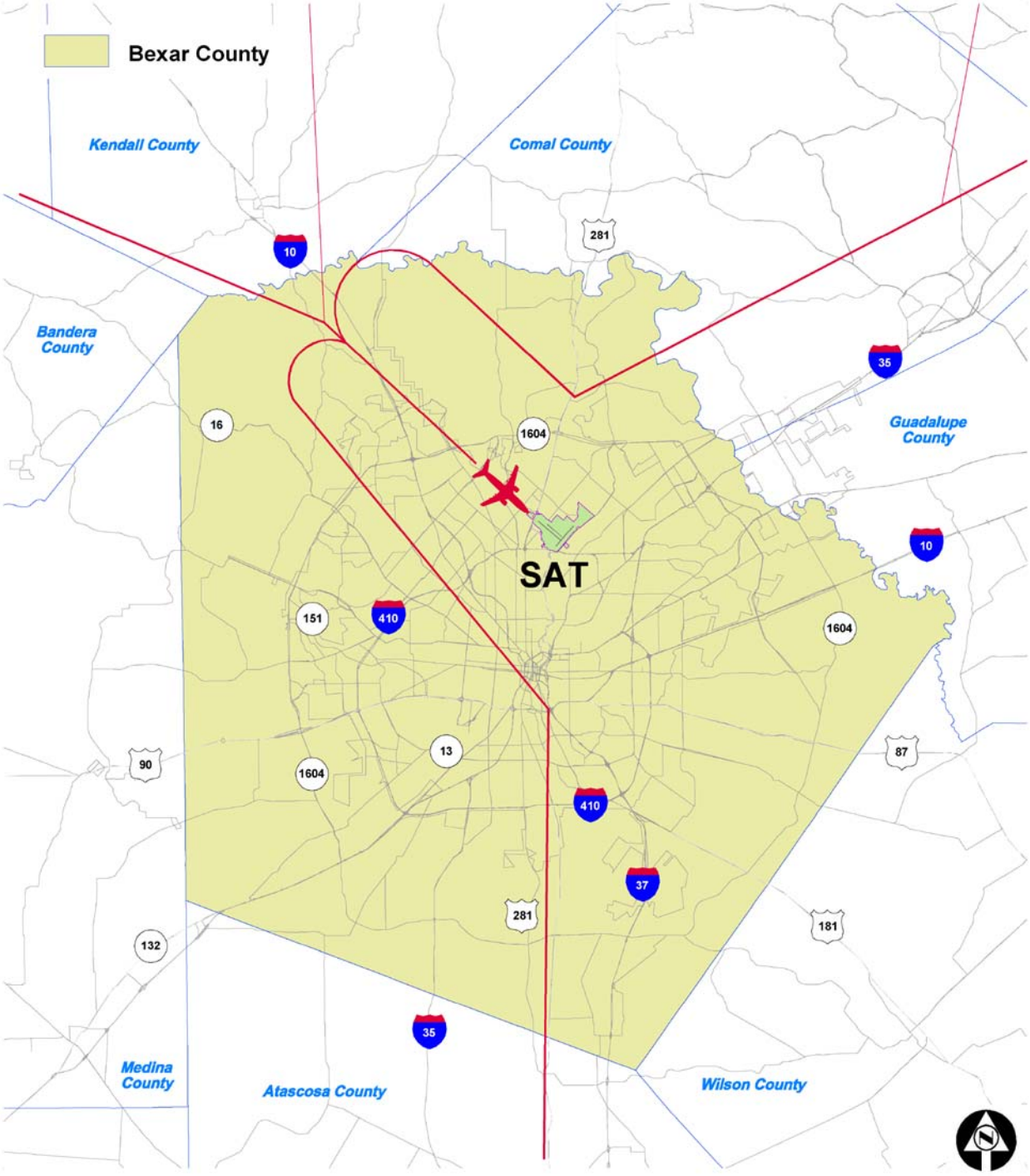
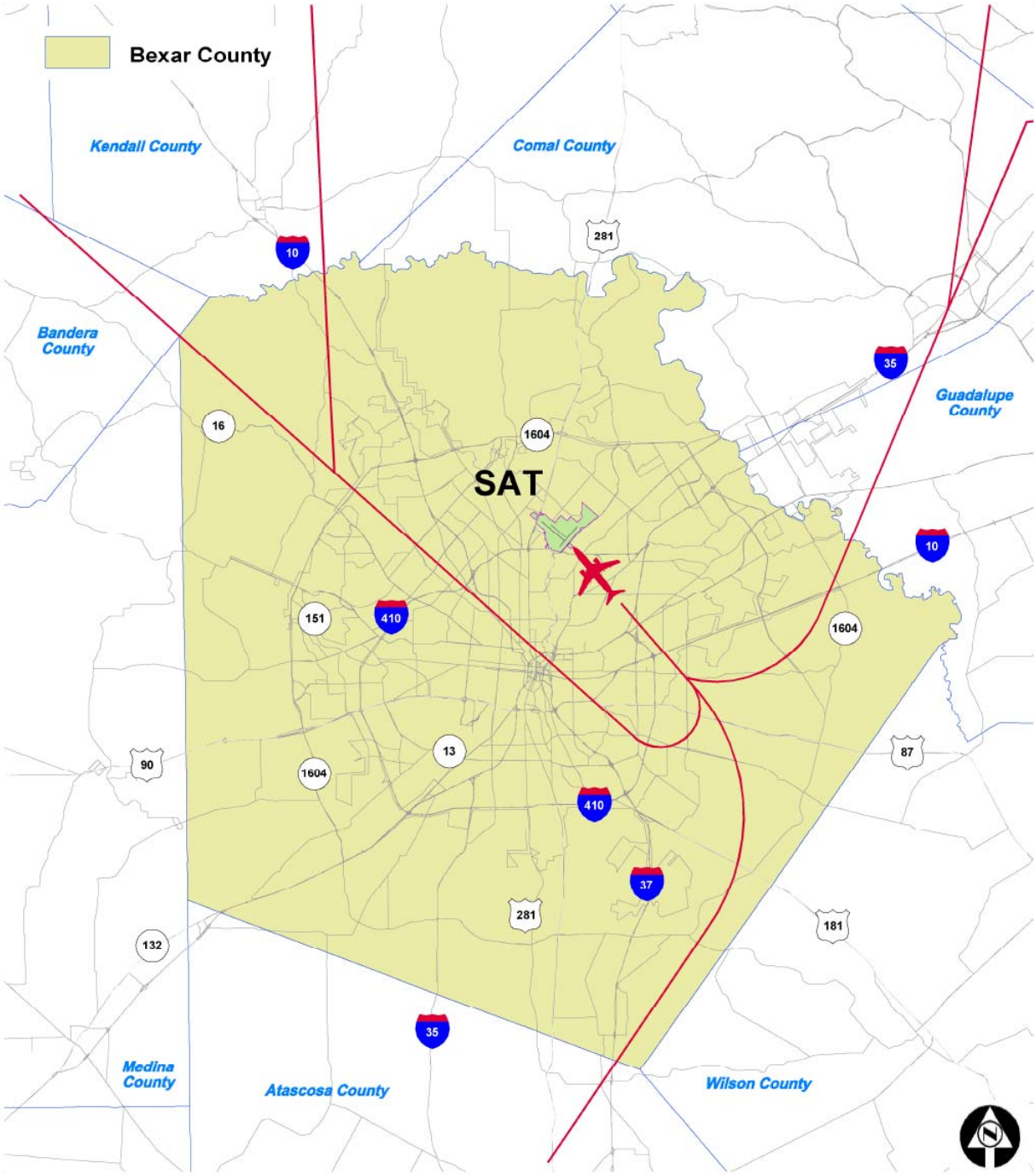


Figure 2-20: Preferred Vectored Landing Route – Runway 30L



Meteorological Conditions

Wind direction dictates the orientation in which aircraft operate. Historically, prevailing winds at the Airport are from the southeast, resulting in the Airport operating in east flow (i.e., most aircraft arrive to and depart from Runways 12L and 12R) approximately 70 percent of the year. Although Runway 12R is the primary runway, Runway 3 is operational during Runway 12R operations. ATCT controllers may switch to north operations when wind and weather conditions dictate. The Airport operates in VFR conditions approximately 90 percent of the year. A complete wind analysis is presented in Chapter 4, "Demand/Capacity and Facility Requirements."

2.3.2 Aircraft Parking, Gates, and Passenger Terminals

The existing terminal area and related facilities are depicted on **Figure 2-21**.

Gates and Apron

Terminal gate types relate to the wingspans and fuselage lengths of the aircraft they accommodate. There are 28 aircraft positions and gates for air carrier and commuter aircraft located throughout Terminals 1 and 2. **Table 2-5** presents a summary of passenger gates by airline.

In addition to the gate facilities, two ramps are provided for remote aircraft parking within the Terminal Area, as shown on **Figure 2-22**. The apron designated as the West Ramp is located between Terminal 2 and the West Cargo Ramp. Additionally, the south remain overnight (RON) apron is located south of Terminal 1 (future Terminal A) adjacent to Gate 16. These RON aircraft parking areas are used on a daily basis for charter activity, aircraft mechanical delays, and/or tenant apron overflow. These positions are not exclusive use, and are not included in tenant leases. The number of aircraft parking positions for each RON apron based on ADG is presented in **Table 2-6**.

Table 2-5: Summary of Passenger Gates

Terminal	Gate	Airline [1]	Gate Type	Notes
Terminal 1	1	City gate	Bridge	FIS gate
	2	AeroMexico Connect / Frontier Airlines	Bridge	FIS gate
	3	Southwest Airlines	Bridge	
	4	Southwest Airlines	Bridge	
	5	Southwest Airlines	Bridge	
	6	Southwest Airlines	Bridge	
	7	Southwest Airlines	Bridge	
	8	City gate	Bridge	
	9	US Airways	Bridge	
	10	Delta Air Lines	Bridge	FIS gate
	11	Mexicana de Aviacion/ Aeromar	Bridge	FIS gate
	12	Delta Air Lines	Bridge	
	13	Delta Air Lines	Bridge	
	14	AirTran Airways	Bridge	
	15	United Airlines	Bridge	
	16	United Airlines	Bridge	
	Total Terminal 1: 16 contact gates			
Terminal 2	30	Vacant	Bridge	
	31	Continental Airlines	Bridge	
	32	Continental Airlines	Bridge	
	33	Continental Airlines	Bridge	
	34	American Airlines	Bridge	
	35	American Airlines	Bridge	
	36	American Airlines	Bridge	
	37	American Airlines	Bridge	
	38	Vacant	Hardstand	
	39	Vacant	Hardstand	
	40	Vacant	Hardstand	
	41	Vacant	Hardstand	
	Total Terminal 2: 8 contact gates and 4 hardstand positions			

[1] Gate assignments as of October 2009. Includes each airline's regional affiliates.
FIS = Federal Inspection Services

Table 2-6: Summary of Remain Overnight Parking Positions

	ADG II (Small jet or turboprop)	ADG III (B-737, MD 80)	ADG IV (B-767)	Total
West Ramp RON	-	12	5	17
South Apron RON	6	-	-	6
Total	6	12	5	23

Figure 2-21: Existing Terminal Area

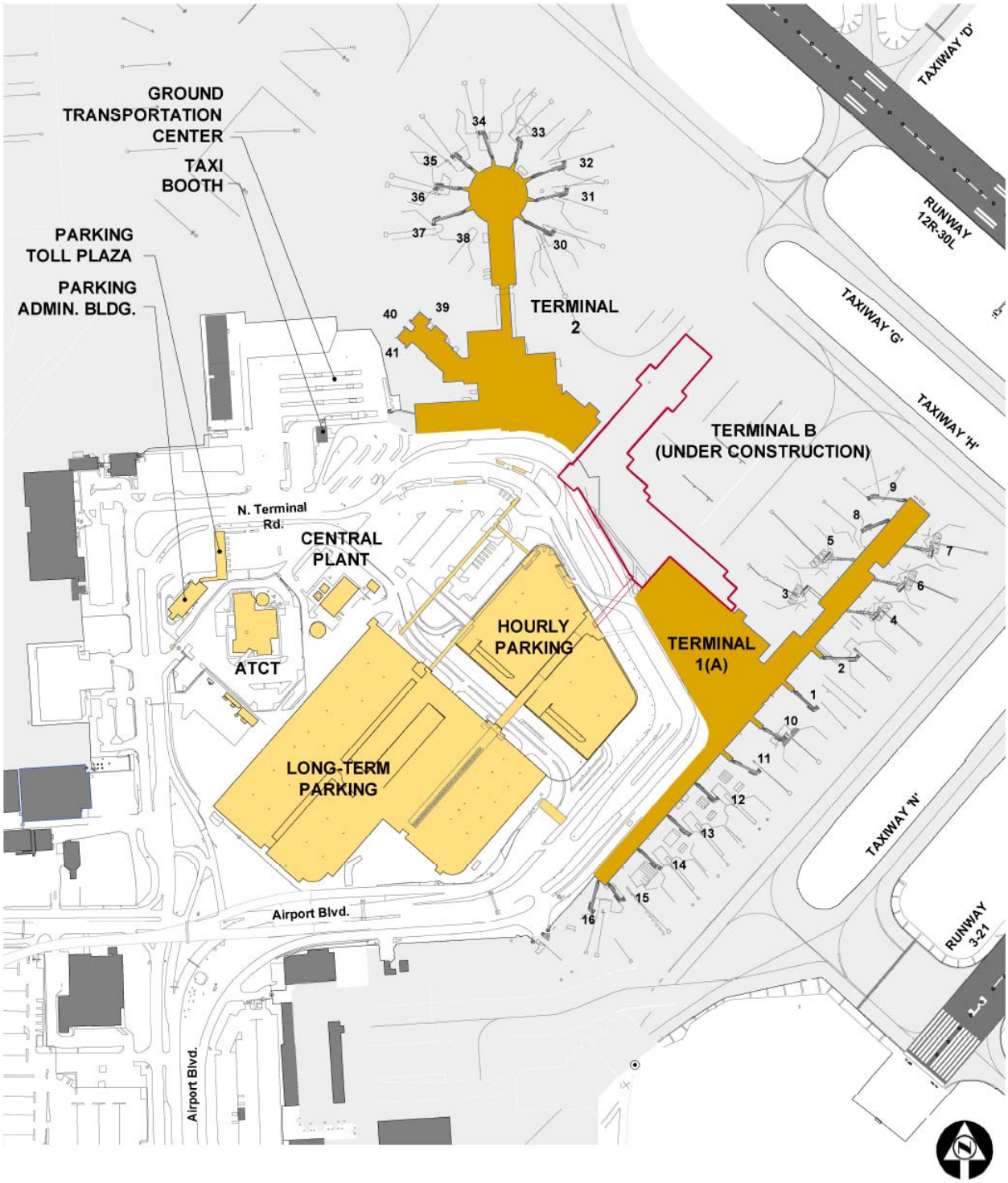
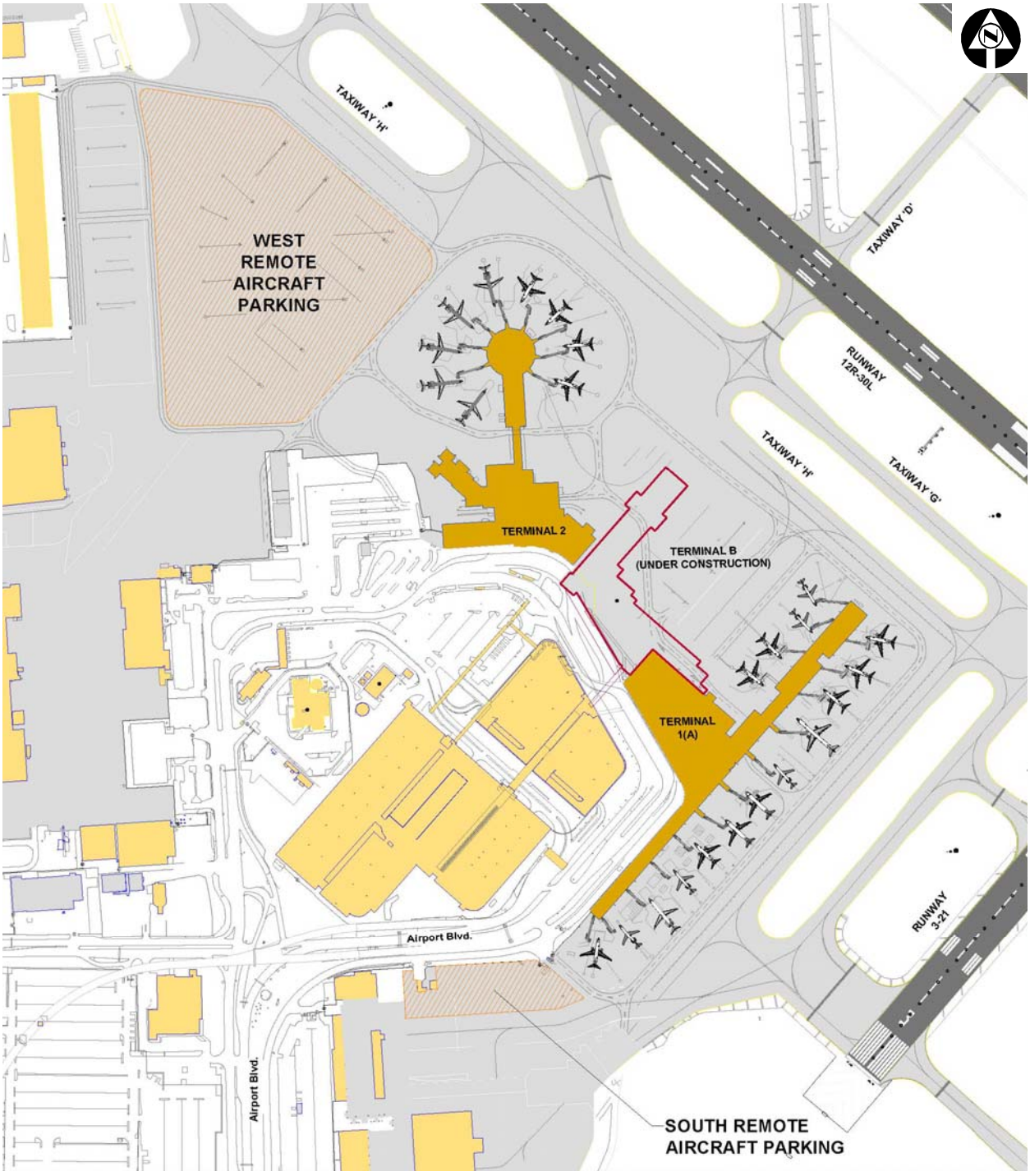


Figure 2-22: Remote Aircraft Parking



Passenger Terminals

The Airport currently has two terminals: Terminals 1 and 2 (see **Figures 2-23** and **2-24**). A new terminal parallel to Terminal 1 (Terminal B) is under construction and is scheduled for completion in 2010. The allocation of space among the various functional uses of the terminal buildings is presented in **Table 2-7**, and shown on **Figures 2-25** through **2-30**. Terminal B will add seven contact gates initially, with expansion capability for one additional contact gate. Terminal B will also add approximately 250,000 square feet of new terminal space to the Airport. Upon completion of Terminal B, Terminal 1 will be renamed Terminal A and Terminal 2 will be demolished.

The existing terminals include space for all airline operations; Transportation Security Administration (TSA) and U.S. Customs and Border Protection (CBP) operations; concessions; ground transportation operations, including rental car services; Aviation Department operations; a range of other passenger services, including United Service Organizations (USO); and other tenants.

FIS Facilities

The Customs and Border Protection (CBP) is the division of the U.S. Department of Homeland Security (DHS) responsible for operating the Federal Inspection Services (FIS) facilities in Terminal 1, through which international arriving passengers are processed. Four contact gates provide direct access to the FIS area on the Arrivals Level of Terminal 1: Gates 1, 2, 10, and 11. Approximately 400 to 600 passengers per day from commercial and general aviation flights are processed through the FIS facility.

Commercial airlines currently schedule approximately 150 international flights per month at SAT, while international general aviation activity accounts for approximately 250 flights per month. Because of the limited number of FIS-capable gates, occasional conflicts arise between general aviation and commercial aircraft for access to these gates.

Figure 2-23: Existing Terminal 1

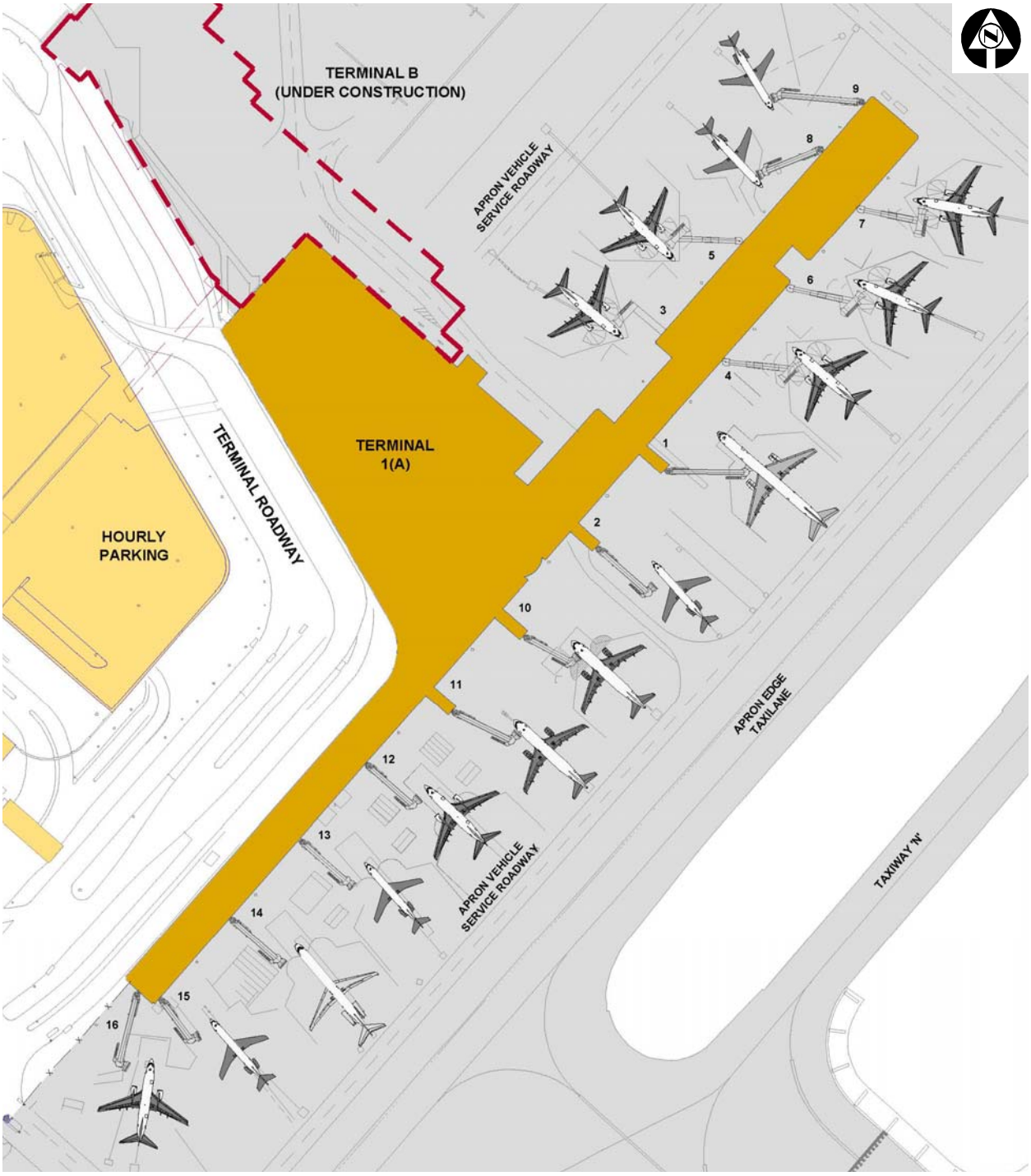


Figure 2-24: Existing Terminal 2

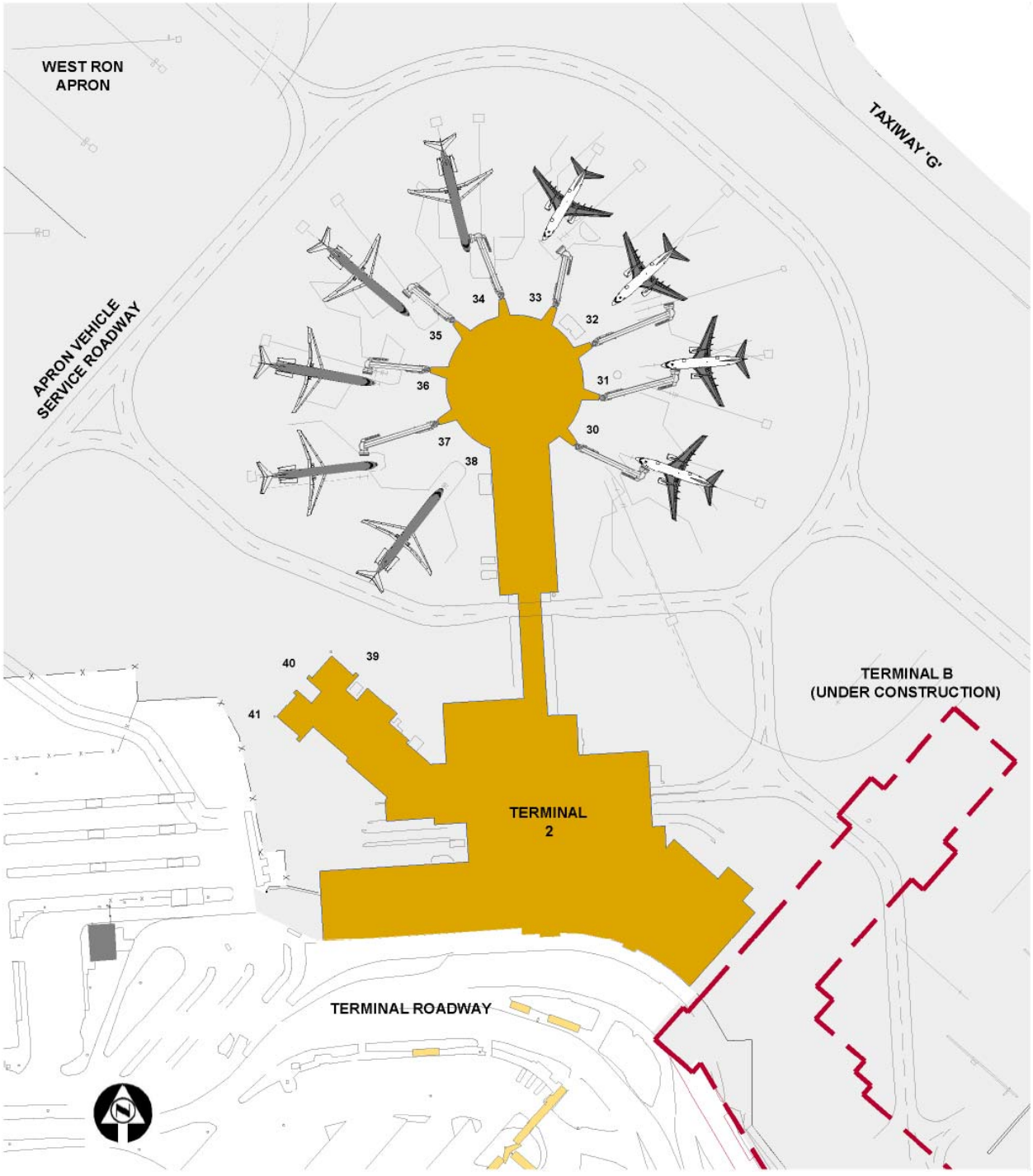


Table 2-7: Terminal Space Inventory

AIRLINE PROCESSOR AREAS	Terminal A	Terminal B	Terminal 2	Units
Agent Positions	58	26	28	EA
Ticket Counter Length	322	107	131	LF
Ticket Counter Area	3,376	1,616	1,445	SF
Airline Ticket Offices	14,520	4,386	3,385	SF
Airline Operations	18,239	12,115	18,777	SF
Baggage Make-up	15,900	12,027	6,702	SF
Airline Clubs	-	2,510	3,873	SF
Subtotal	52,035	32,654	34,182	SF
AIRCRAFT GATES				
Widebody	-	-	-	EA
Large Narrowbody	-	4	-	EA
Narrowbody	16	4	12	EA
Subtotal	16	8	12	EA
Equivalent Aircraft (EQA) Index	22.4	13.6	16.8	EA
HOLDROOMS				
Widebody	-	-	-	SF
Large Narrowbody	-	7,668	-	SF
Narrowbody	32,314	7,670	12,639	SF
Subtotal	32,314	15,338	12,639	SF
BAGGAGE CLAIM				
Claim Frontage	784	425	330	LF
Claim Units	5	3	3	EA
Claim Area	12,627	12,224	8,286	SF
Baggage Service Offices	1,668	1,124	639	SF
Inbound Bag Area	11,141	16,353	5,374	SF
Subtotal	25,436	29,701	14,299	SF
CBP				
US Customs and Border Protection (FIS)	26,426	-	-	SF
Subtotal	26,426	-	-	SF
PUBLIC SPACE				
Ticket Lobby	16,605	5,248	3,606	SF
Meeter/Greeter Lobby	1,760	3,243	1,035	SF
Restrooms - Terminal Area	2,702	2,753	1,851	SF
Restrooms - Concourse Area	5,675	3,750	2,170	SF
Secure Circulation	29,510	13,373	23,451	SF
Sterile Circulation	4,498	-	-	SF
Other Public Circulation	23,681	48,135	12,618	SF
Miscellaneous	-	-	-	SF
Subtotal	84,431	76,502	44,731	SF
CONCESSIONS				
Ground Transportation Services	1,687	800	1,111	SF
Concessions: Non-Secure	4,594	826	352	SF
Concessions: Secure	19,739	14,442	13,354	SF
Loading Dock	365	-	-	SF
Concessions Support	4,423	4,356	543	SF
Subtotal	30,808	20,424	15,360	SF
SECURITY				
Passenger Screening Lanes	6	3	4	EA
Passenger Screening Lane Space	6,400	9,228	5,449	SF
Baggage Screening Space	20,700	-	1,950	SF
Baggage Screening Equip. (EDS)	5	-	2	EA
Subtotal	27,100	9,228	7,399	SF
OTHER				
Non-Public Circulation	6,287	4,546	16,779	SF
Non-Public Vertical Circulation	9,097	10,841	4,398	SF
Non-Airline Tenant	-	3,016	3,014	SF
Airport Maintenance	-	-	-	SF
Airport Administration	22,811	12,669	28,487	SF
Mechanical/Electrical/Utility	42,568	-	1,101	SF
Janitorial/Storage/Shops	-	-	-	SF
TSA Administration	977	1,790	3,281	SF
Unidentified Areas	10,642	-	1,247	SF
Structure/non-net Areas	6,695	42,103	8,517	SF
Subtotal	99,077	74,965	66,824	SF
Total	**377,627**	**258,812**	**195,434**	**SF**
Total (Rounded)	**378,000**	**259,000**	**195,000**	**SF**

Note:
1. Terminal A quantities reflect operation of the inline baggage system.
EA = Each
EDS = Explosives Detection System
FIS = Federal Inspection Services
LF = Linear feet
SF = Square feet

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Figure 2-25: Terminals A and B Service Level

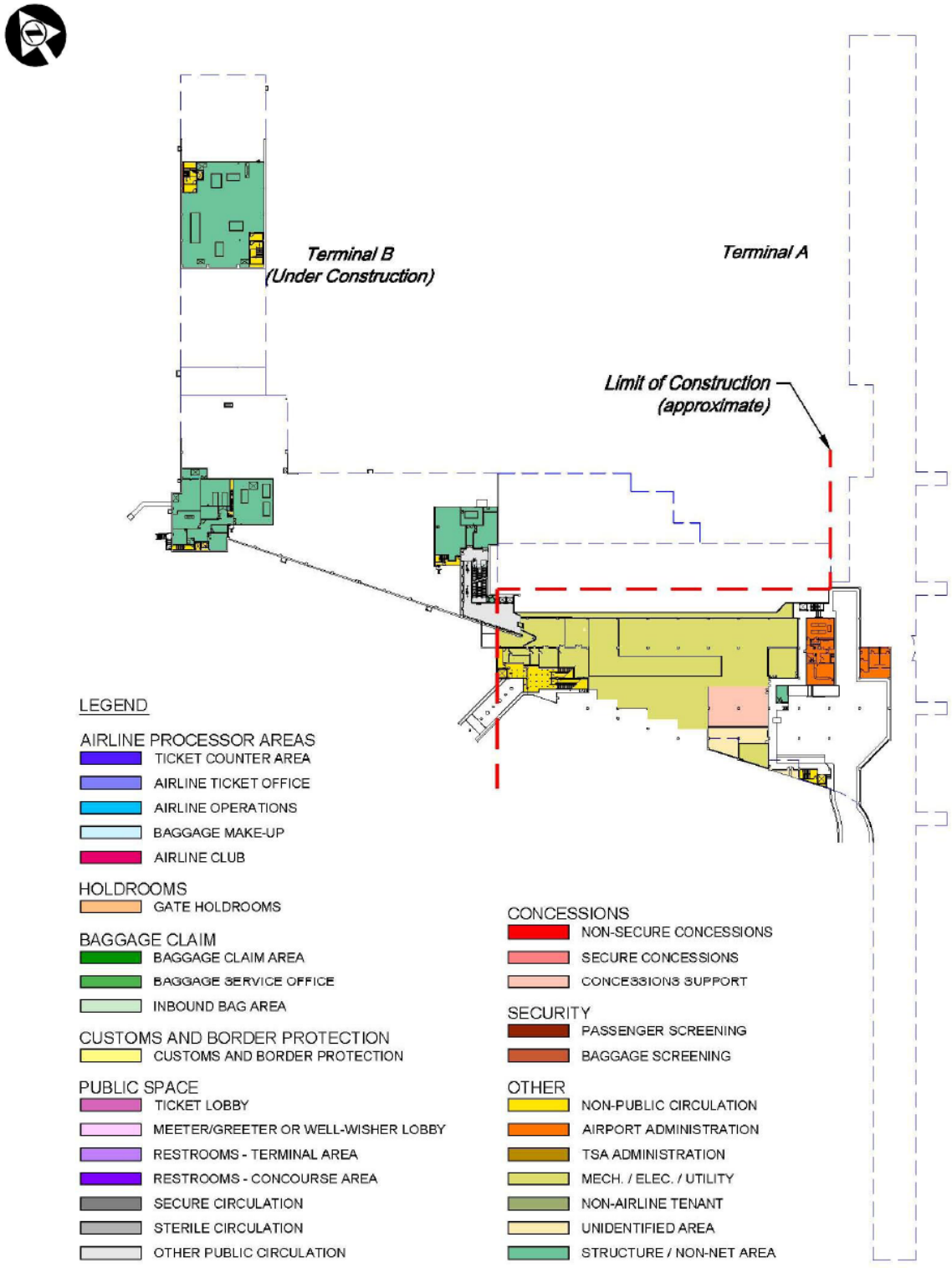

Figure 2-26: Terminals A and B Arrivals Level

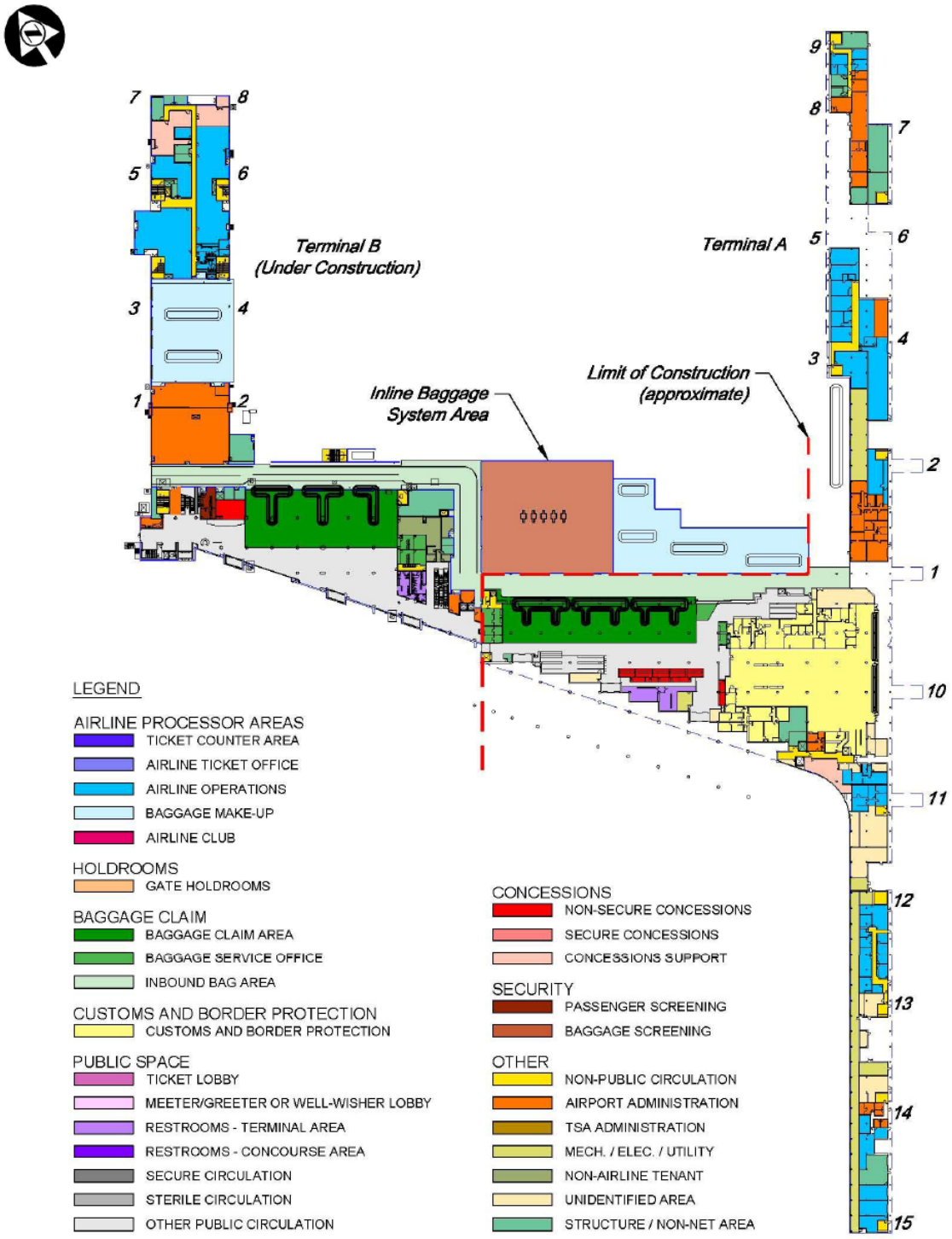

Figure 2-27: Terminals A and B Departures Level

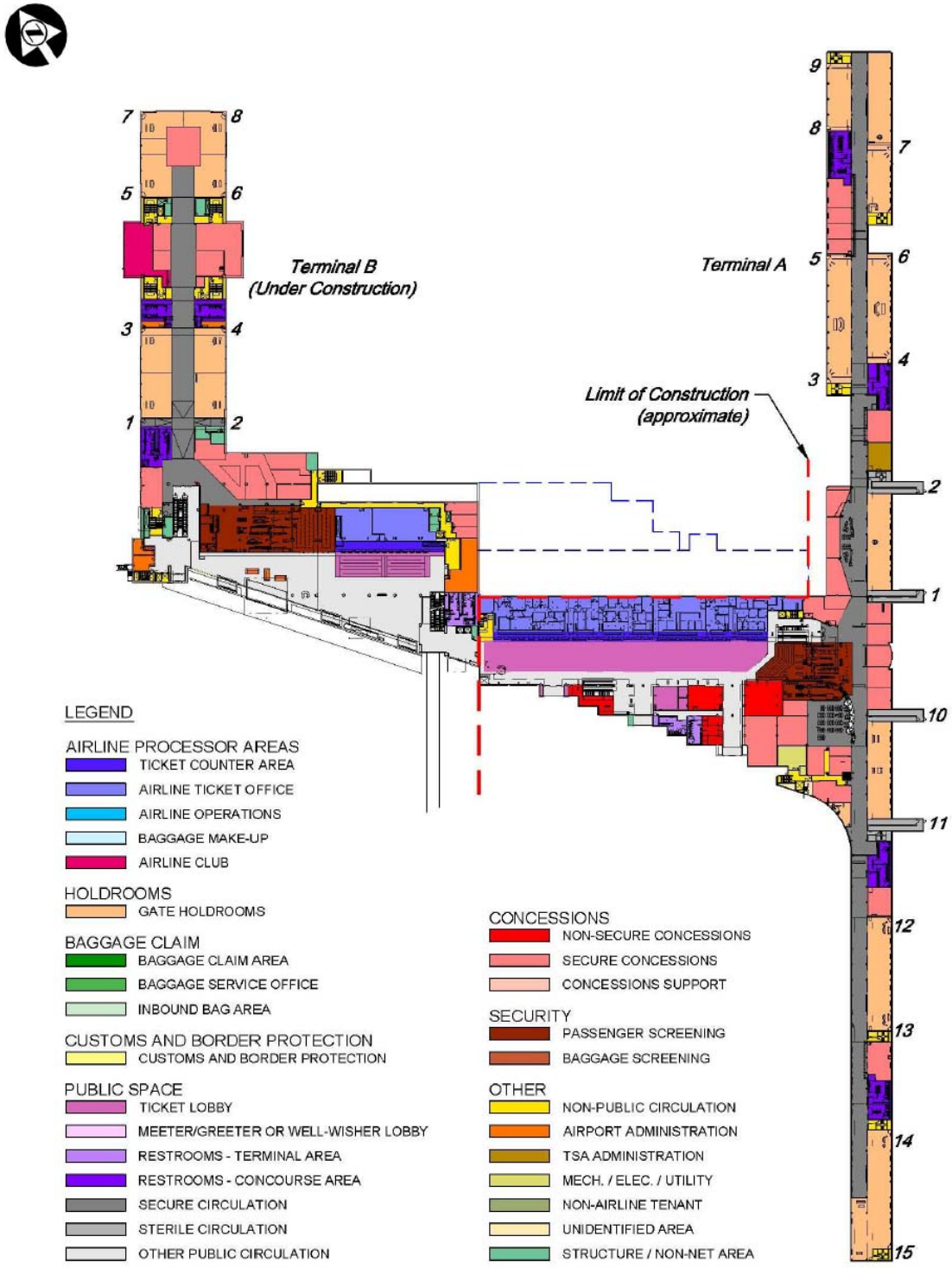

Figure 2-28: Terminals A and B Upper Level

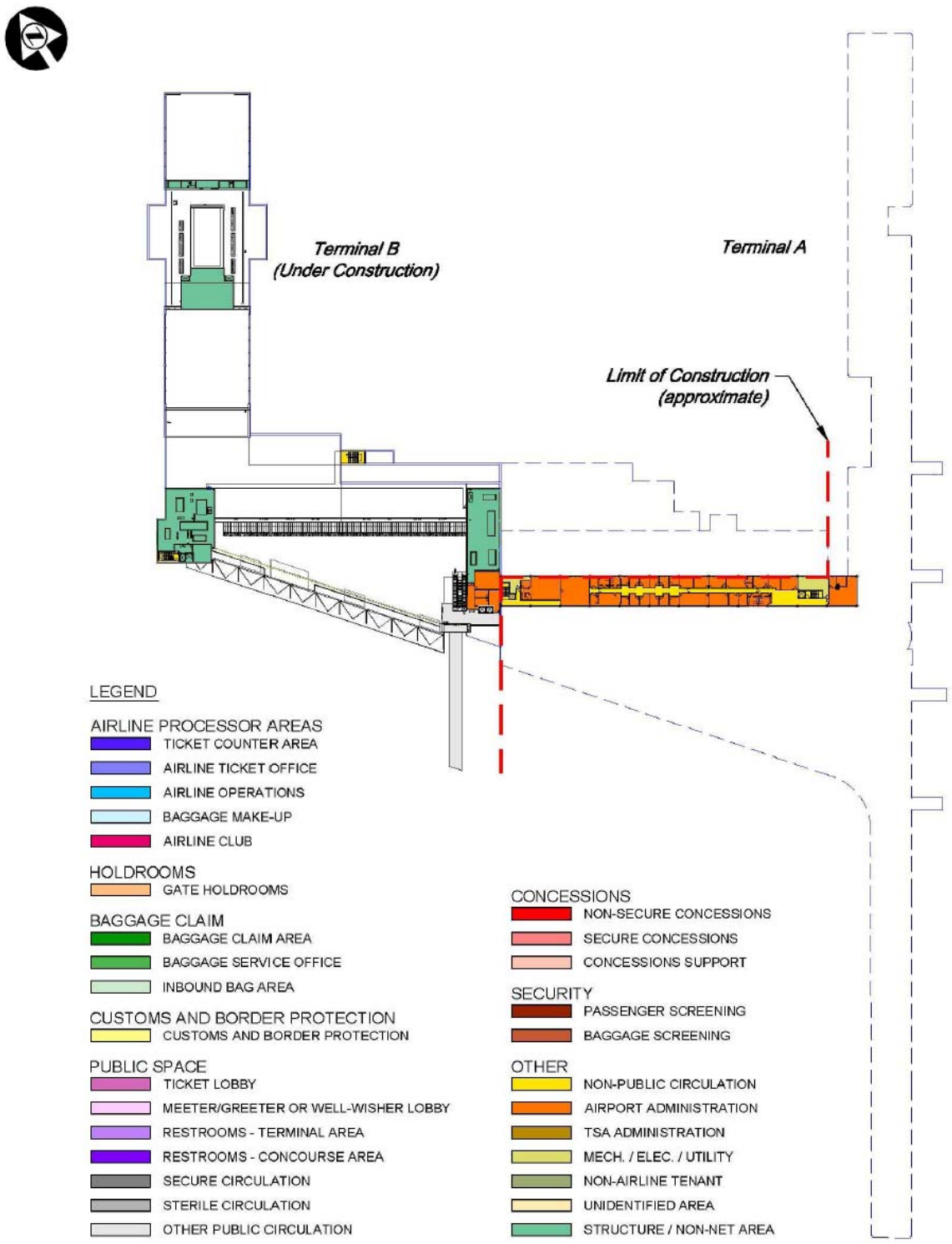

Figure 2-29: Terminal 2 Departures and Arrivals Levels

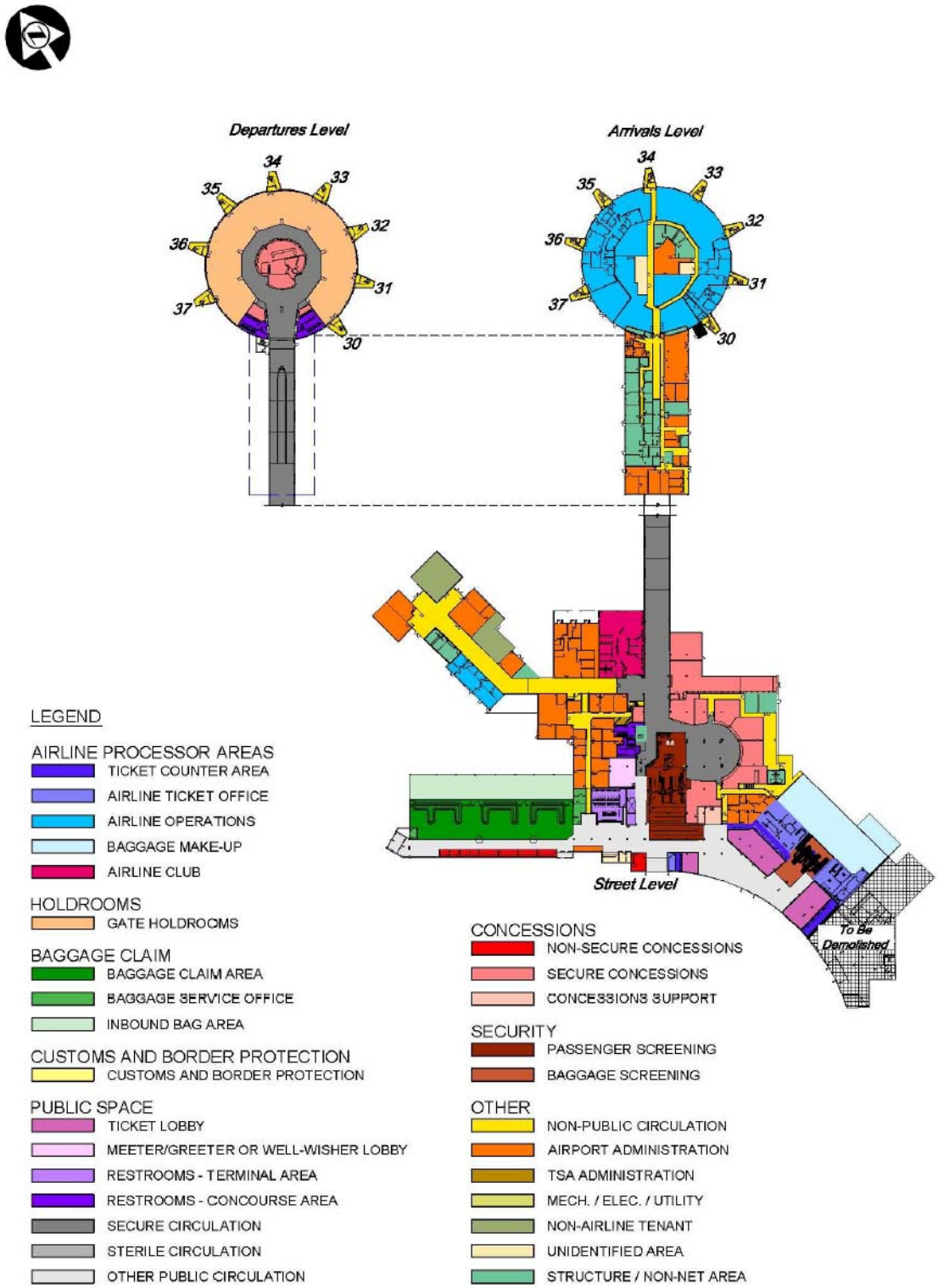

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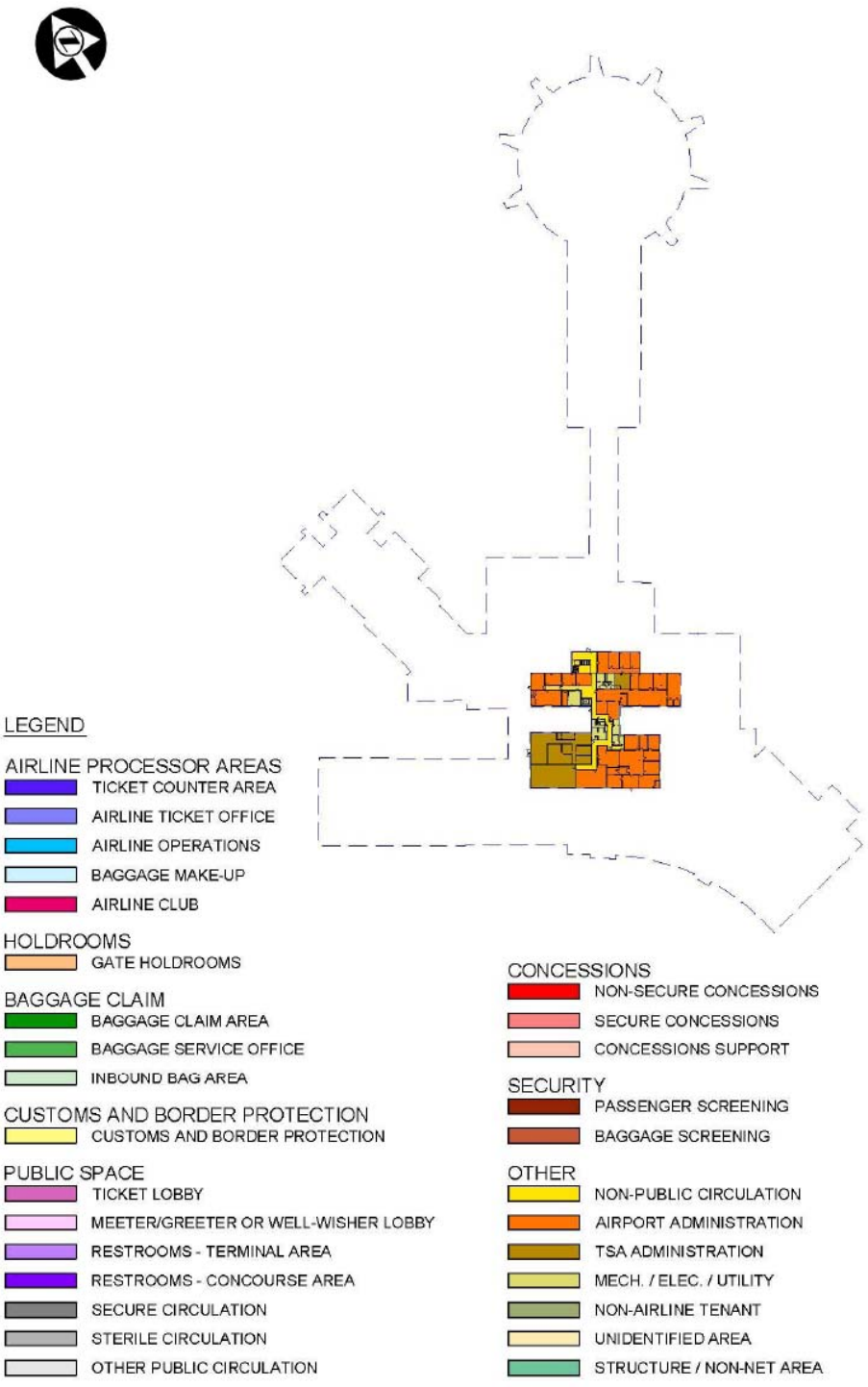
Figure 2-30: Terminal 2 Upper Level



2.3.3 Landside Facilities and Ground Access

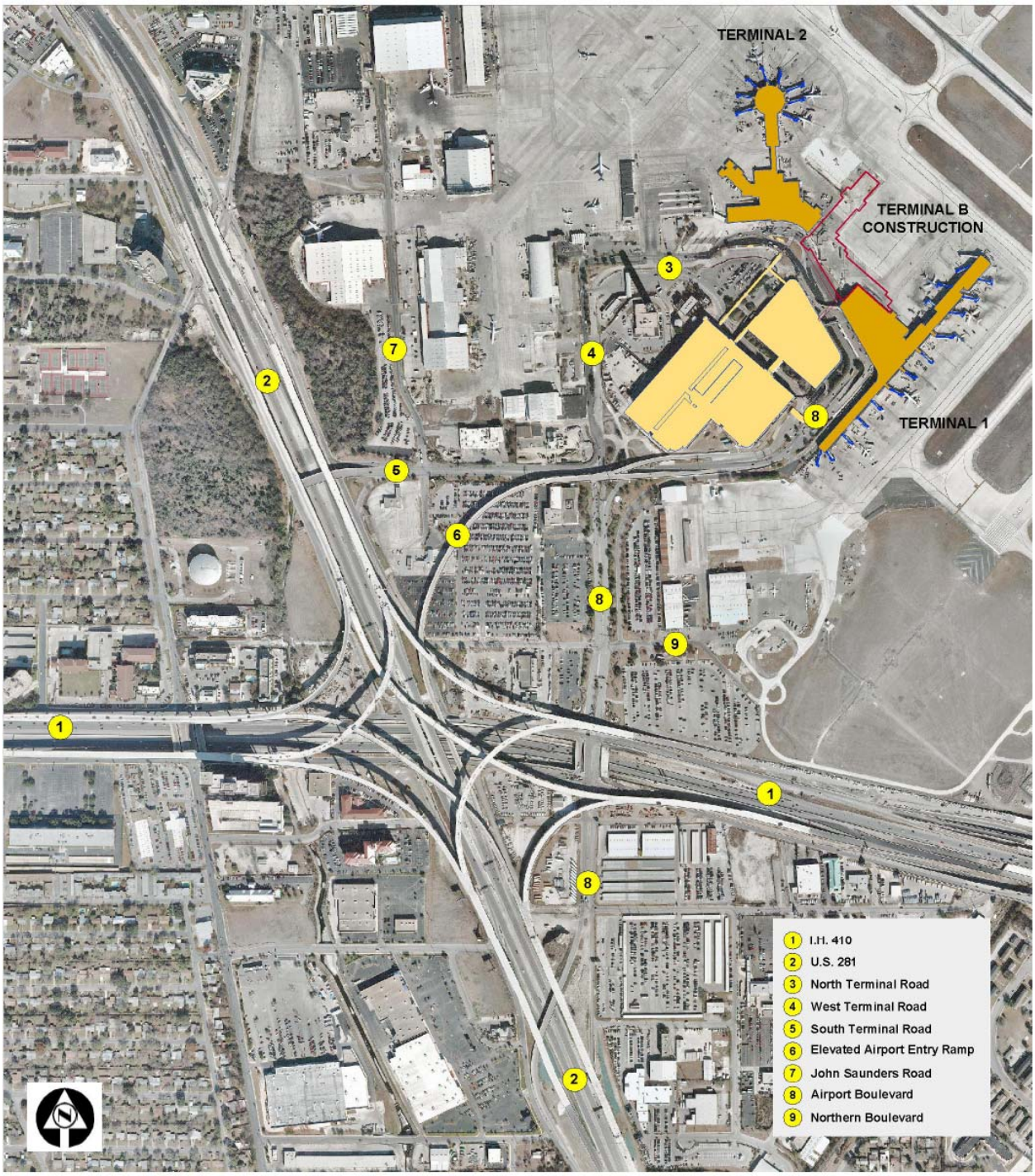
Roadways

The Airport is located seven miles north of downtown San Antonio, on the northeast corner of the interchange between Loop 410 and U.S. 281, as shown on **Figure 2-31**. This location allows direct freeway access throughout the San Antonio metropolitan area for passengers, employees, and other Airport users. The key roadways serving the terminal area are shown on **Figure 2-32**.

The approximate average daily traffic volumes (bidirectional, where appropriate) are also shown on Figure 2-31, based on available data for 2005 and 2007. Additional traffic counts were collected in July 2009 for on-Airport locations, including separate counts by direction and for each 15-minute interval for a week. Turning movement counts at selected intersections were also collected, along with manual classification counts.

Figure 2-31: Airport Roadway Access

Figure 2-32: Terminal Roadway Access



The key roadways serving the terminal area include the following.

Airport Boulevard

Airport Boulevard is a north-south roadway that connects the terminal area with Loop 410, both eastbound and westbound, and with U.S. 281 to and from the south. It is typically a four-lane divided roadway with added lanes for selected turning movements and with signalized intersections at the Loop 410 service roads, Northern Boulevard, and South Terminal Drive

The northbound exit from U.S. 281 to Airport Boulevard crosses under the ramps to Loop 410 and then continues northward, passing the Loop 410 service road intersections, and into the Airport. The southbound portion of Airport Boulevard leaving the Airport passes the Loop 410 service road intersections and crosses under the Loop 410 connector ramps and over the main lanes of U.S. 281 before narrowing to a single lane and merging with the southbound lanes of U.S. 281.

On Airport, the northbound portion of Airport Boulevard splits, with one branch bending eastward to join the eastbound portion of South Terminal Drive and the elevated Airport entry ramp to access the terminal curbsides and terminal area parking. The other northbound branch allows westbound turns at the intersection with South Terminal Drive. The southbound portion of Airport Boulevard starts at the intersection of South Terminal Drive and West Terminal Drive.

As Airport Boulevard approaches the terminals, it splits between Terminals 1 and 2, with the Terminal 1 branch splitting again between a two-lane ramp to a four-lane upper level (Departures Level) curbside road and a two-lane ramp to a lower level (Arrivals Level) curbside road. The lower road is joined by a dedicated taxicab access road that parallels Airport Boulevard and crosses under the Departures Level ramp to form a four-lane inner curb area. The roadway to Terminal 2 also serves as a three-lane outer curb for other commercial vehicles at the Terminal 1 Arrivals Level. The curbside lengths are shown in **Table 2-8.**

Currently, a single lane ramp down from the Departures Level joins with the two-lane roadway exiting the Terminal 1 Arrivals Level and proceeds to a single-level curbside area serving Terminal 2, with three curb lanes and two bypass lanes. Access is also provided between this road and a commercial vehicle courtyard area west of Terminal 2. As the road exits the Terminal 2 area and turns southbound, it becomes West Terminal Drive, merges with the exit from the terminal parking area, and proceeds southbound to the intersection of Airport Boulevard and South Terminal Drive. Construction is under way to extend the elevated Departures Level road and related Arrivals Level road and curbs beyond Terminal 1 around to West Terminal Drive to serve the future terminals.

Table 2-8: Terminal Curbside Length

MODE	EXISTING CURB LENGTH (feet) TERMINAL 1	TERMINAL 2	COMMENTS
DEPARTURES LEVEL CURB			
Automobiles	330	60	Area Open - No vehicle designation
Taxicabs	-	-	
Door-to-Door Vans	-	-	
Limousines	-	-	
Parking Shuttles	-	-	
Hotel and Rental Car Shuttles	-	-	Rental car shuttles drop passengers off on lower (pickup) level
Other Buses	20	-	Employee Shuttle
Subtotal	**350**	**60**	
ARRIVALS LEVEL CURB			
Automobiles	369	240	4 lanes
Taxicabs	420	552	3 lanes
Authorized Vehicles (Police etc.)	-	-	
Limousines	-	184	
Parking Shuttles	-	-	
Hotel and Rental Car Shuttles	96	184	
Other Buses	20	184	SATRANS Bus, Charter/Intercity
Subtotal	**905**	**1,344**	
MODE	BASELINE CURB LENGTH (feet) TERMINAL A	TERMINAL B	COMMENTS
DEPARTURES LEVEL CURB	415	360	* Baseline Departures Level curb is assumed to be mixed use
Automobiles	-	-	
Taxicabs	-	-	
Door-to-Door Vans	-	-	
Limousines	-	-	
Parking Shuttles	-	-	
Hotel and Rental car Shuttles	-	-	
Other Buses	-	-	
Subtotal	**415**	**360**	
ARRIVALS LEVEL CURB			* Baseline Arrivals Level curb data are based on "SAT Curbside Allocation" plan
Automobiles	170	140	Condition 4 - Option 2 - Multistop; dated September 2009
Taxicabs	100	60	
Authorized Vehicles (Police etc.)	-	-	
Limousines	-	-	
Parking Shuttles	100	100	
Hotel and Rental Car Shuttles	240	240	
Other Buses	40	250	SATRANS Bus, Charter/Intercity
Subtotal	**650**	**790**	

Elevated Airport Entry Ramp

A separate entry to the Airport from U.S. 281 from the south is provided via an elevated, single lane ramp. This exit off U.S. 281 is further north than the exit to Airport Boulevard. Once on Airport, the ramp splits between single-lane ramps to either terminal area parking or the terminal curbsides, joining the at-grade roadway connections from Airport Boulevard and South Terminal Drive.

South Terminal Drive

South Terminal Drive provides eastbound entry into the Airport from southbound U.S. 281 and westbound exit from the Airport to both northbound and southbound U.S. 281. It is typically a four-lane divided roadway with added lanes for selected turning movements and with signalized intersections at Airport Boulevard, John Saunders Road, and the southbound U.S. 281 service road. It is elevated above the main lanes of U.S. 281 and the northbound U.S. 281 service road. It provides access to and from the Airport terminal curbsides and terminal parking, as well as tenant facilities and Avis Rent A Car operations along John Saunders Road.

Northern Boulevard

Airport entry and exit are possible at the nonsignalized intersection of Northern Boulevard with the northbound U.S. 281 service road. Northern Boulevard is typically a two-lane undivided roadway providing access for passenger economy parking, employee parking, and commercial vehicle staging, as well as general aviation facilities. The intersection of Northern Boulevard with Airport Boulevard is signalized.

Roadways providing access to others parts of the Airport (cargo areas, maintenance areas, additional rental car companies, and other tenants) include Jones Maltsberger Road, Isom Road, Sandau Road, and East Nakoma Street on the west, and Wetmore Road and Starcrest Drive/Wurzbach Parkway on the east. These roadways range from four-lane divided roadways to two-lane undivided roadways. It is now planned to extend the east-west Wurzbach Parkway across the northern side of the Airport, which will increase the traffic in that area and provide enhanced entrances/exits to the northern Airport areas.

Public Transportation

Public transportation services to and from the Airport include taxicabs, shuttle buses and vans, and public bus.

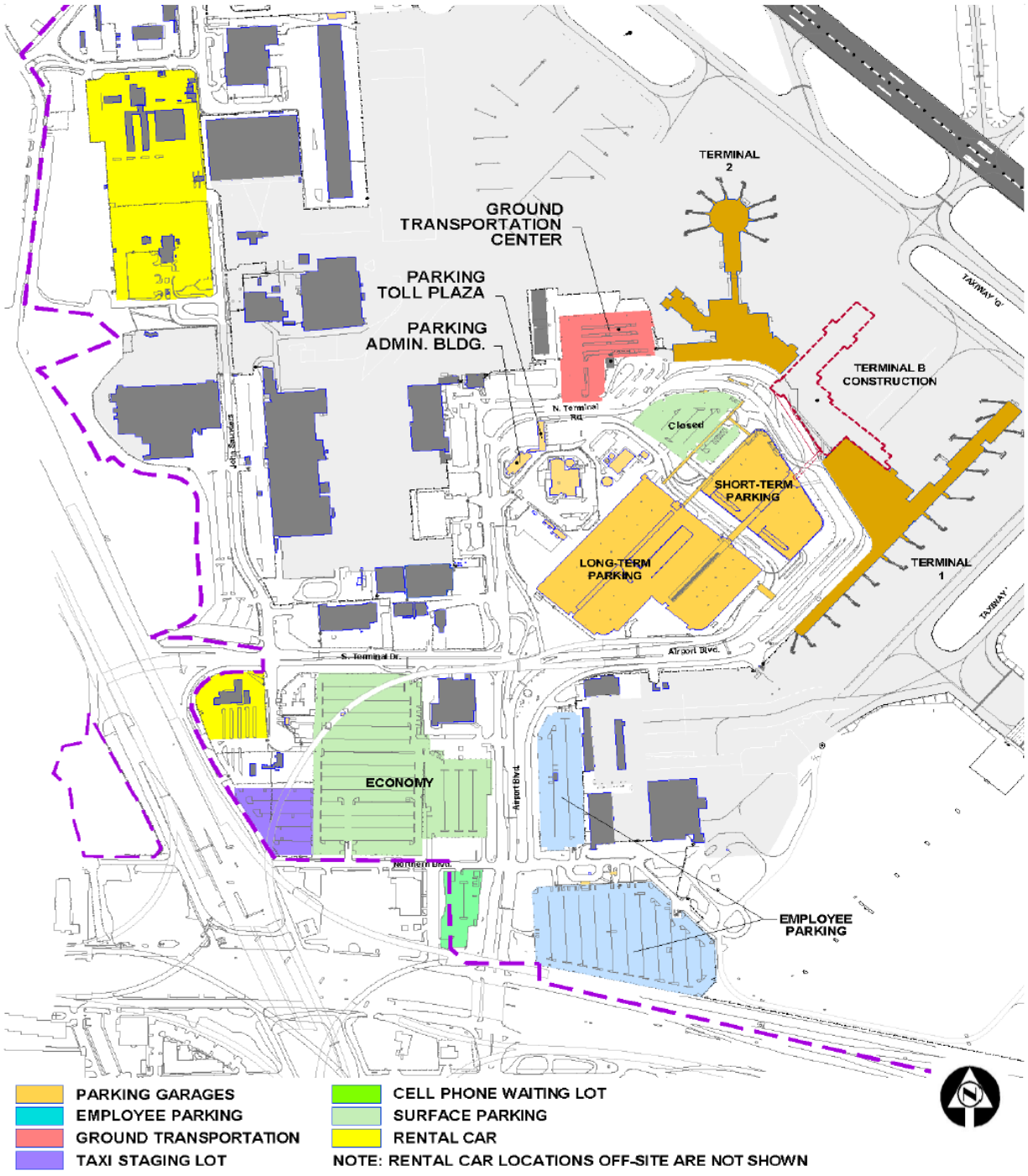
Taxicabs

Taxicabs may drop off passengers at the Departures Level of Terminal 1 and at the inner curbside of Terminal 2, but passengers are picked up in designated areas on the lower level of Terminal 1 and the ground transportation center (GTC) at Terminal 2. The GTC is shown on **Figure 2-33**.

Shuttle Buses and Vans

Shuttle buses and vans provide free, dedicated service between the terminals and remote sites, including rental car lots, nearby hotels, and on and off-Airport parking lots. Passengers are dropped off and picked up on the outer curb at Terminal 1 and at the GTC at Terminal 2.

Figure 2-33: Ground Transportation Facilities



Public Bus

Local public bus service is provided by VIA Metropolitan Transit (VIA) and shared-ride bus service is provided by the SATRANS Airport Express between the Airport and various fixed locations, such as downtown, military bases, and others.

The Airport Express provides scheduled bus service between the Airport and downtown hotels, and pre-arranged service to the other locations. Downtown hotel service operates every 30 minutes between 7:00 a.m. and 1:00 a.m. Passengers are dropped off and picked up on the inner curb on the Arrivals Level at Terminal 1 and in the GTC at Terminal 2.

VIA Route #5 provides access to and from the Airport, connecting the Airport with downtown, traveling on McCullough Avenue. Service to the Airport is provided between 5:30 a.m. and 10:00 p.m. and operates every 30 minutes during the day, with less-frequent service between 7:00 p.m. and 10:00 p.m. At the Airport, passengers are typically dropped off and picked up on the inner curb on the Arrivals Level at Terminal 1 and in the courtyard at Terminal 2. However, during construction in the terminal area in 2010, VIA buses are picking up and dropping off passengers near the economy parking lot and passengers ride the economy parking shuttle to and from the terminals. Upon completion of construction, it is expected that VIA will resume picking up and dropping off passengers at the terminal buildings.

Other Services

Several other service providers offer pre-arranged (charter) transit service to and from the Airport using vans, buses, or limousines.

Rental Car Facilities

SAT passengers are served by nine rental car companies, with shuttle buses and vans transporting passengers between the terminals and the rental car lots. Individual rental car company information on numbers of parking spaces was provided on the promise of confidentiality; a total of 1,500 rental and return spaces are available for all companies. Avis Rent A Car System is located just west of the terminal area, on the southwest corner of South Terminal Drive and John Saunders Road. The Hertz Corporation, Budget Rent A Car System, Dollar Rent A Car, and Enterprise Rent-A-Car are located northwest of the terminal area, accessed via Jones Maltsberger Road off U.S. 281. Advantage Rent A Car, National Car Rental / Alamo Rent A Car, and Thrifty are located south of the terminal area, around the intersection of Loop 410 and Airport Boulevard.

Automobile Parking

Parking is provided for passengers and their escorts (well-wishers and meeters/greeters), as well as for employees of the various Airport tenants (see Figure 2-33). Public parking includes terminal area garages for hourly (1,569 spaces) and long-term (5,566 spaces) parkers, as well as an economy lot (1,572 spaces) to the south of South Terminal Drive and west of Airport Boulevard, served by the Airport Parking Shuttle. Off-Airport long-term parking is also offered by companies, such as Airport Security Parking.

A dedicated parking lot (1,263 spaces) is available on the southeast corner of Airport Boulevard and Northern Boulevard for terminal employees. For other Airport employment centers, employee parking is typically provided at each site.

Taxicab Staging Lots

A commercial vehicle staging lot is available for taxicabs that must wait prior to proceeding to the Arrivals Level curbs for pickups. The lot is located on the southwest corner of the Airport, west of the economy lot and south of the Avis Rent A Car facility (see Figure 2-33). Taxicabs access this lot from Northern Boulevard and wait until dispatched to the terminal. They then proceed east on Northern Boulevard, just past Airport Boulevard, to a dedicated road for taxicab access to the inner lower curb at Terminal 1.

Cell Phone Waiting Lot

For drivers traveling to the Airport to pick up arriving passengers, it is difficult to coordinate the timing of meeting passengers at the curb at the same time the vehicles arrive at the curb. Prior to September 11, 2001, vehicles parked at the curb waiting for passengers. However, TSA has since established policies that require passengers to be present before vehicles are allowed to stop at the curb. This change in procedure has led to a large number of vehicles circulating around the Airport until passengers have arrived at the curbside.

The cell phone waiting lot is an alternative to circling the terminal roadway at SAT. Drivers can park for free and wait for their passengers to call and let the drivers know that they are ready to be picked up. The lot, with 100 spaces, is located on the southwest corner of Airport Boulevard and Northern Boulevard, as shown on Figure 2-33, , and has a capacity of 100 spaces. This location is convenient for drivers arriving at the Airport early, as well as drivers who attempted to pick up passengers before the passengers' flights arrived; they can circle back to the cell phone lot and wait for a call.

Regional Multimodal Transportation Plans

On a regional level, surface transportation congestion poses significant challenges. The City of San Antonio recognizes that implementing transportation strategies will improve regional mobility. As such, increasing transportation options is one of the City's goals listed in the City of San Antonio Master Plan. Several agencies are involved in transit planning in the San Antonio region:

Alamo Regional Mobility Authority

The Alamo Regional Mobility Authority (Alamo RMA) is an independent governmental agency created by the Texas Transportation Commission and the Bexar County Commissioners Court in December 2003 to accelerate the implementation of transportation projects in Bexar County.

While the Alamo RMA's main focus is on adding highway capacity**,** its 2007-2011 Strategic Plan states that "we also recognize the future mobility of Bexar County is going to require a multi-modal approach to congestion relief, a task which we embrace as we

plan and design long-term multi-modal transportation solutions for our community." No specific multimodal projects are delineated in the Strategic Plan.

Austin-San Antonio Intermunicipal Commuter Rail District

In 1997, the State of Texas authorized the creation of the Austin-San Antonio Intermunicipal Commuter Rail District to pursue development of passenger rail service between the San Antonio and Austin metropolitan areas, in a corridor paralleling Interstate Highway 35. The San Antonio and Austin Metropolitan Planning Organizations adopted a preferred alignment for the commuter rail in 2005. The selected alternative is a 112-mile regional passenger rail system located in the existing Union Pacific rail corridor for most of its length. Fifteen stations are planned along the route, including a station at SAT. The actual location of the station serving the Airport, the implementation timeline, and funding for the Rail District's plan have not been determined at this time.

San Antonio Bexar County Metropolitan Planning Organization

The San Antonio Bexar County Metropolitan Planning Organization has responsibility for preparing a Metropolitan Transportation Plan every 5 years. The most recent plan — Mobility 2030 — was adopted in December 2004. The plan acknowledges the need for transit improvements to better serve the needs of the region by providing increased frequency and longer operating hours along key corridors, but it does not define a plan to improve transit access to the Airport specifically.

2.3.4 Air Cargo

The Airport facilities essential for processing air cargo are described in this section. For master planning purposes, air cargo is defined to include both freight and mail. Cargo services at the Airport are provided by several passenger airlines, all-cargo airlines, and integrated cargo airlines. In 2008, the all-cargo airlines serving the Airport transported approximately 140,000 tons of cargo. The all-cargo and integrated cargo operators and forwarders serving SAT include:

Integrated Cargo Airlines
- DHL - Building #1600
- FedEx - Building #1620
- United Parcel Service of America - Building #2651

Ground Cargo Handlers
- CEVA Logistics - Building #2650

All-Cargo Airlines
- Ameriflight
- Astar Air Cargo
- Martinaire

Cargo facilities are divided between the West Cargo Complex and the East Cargo Complex.

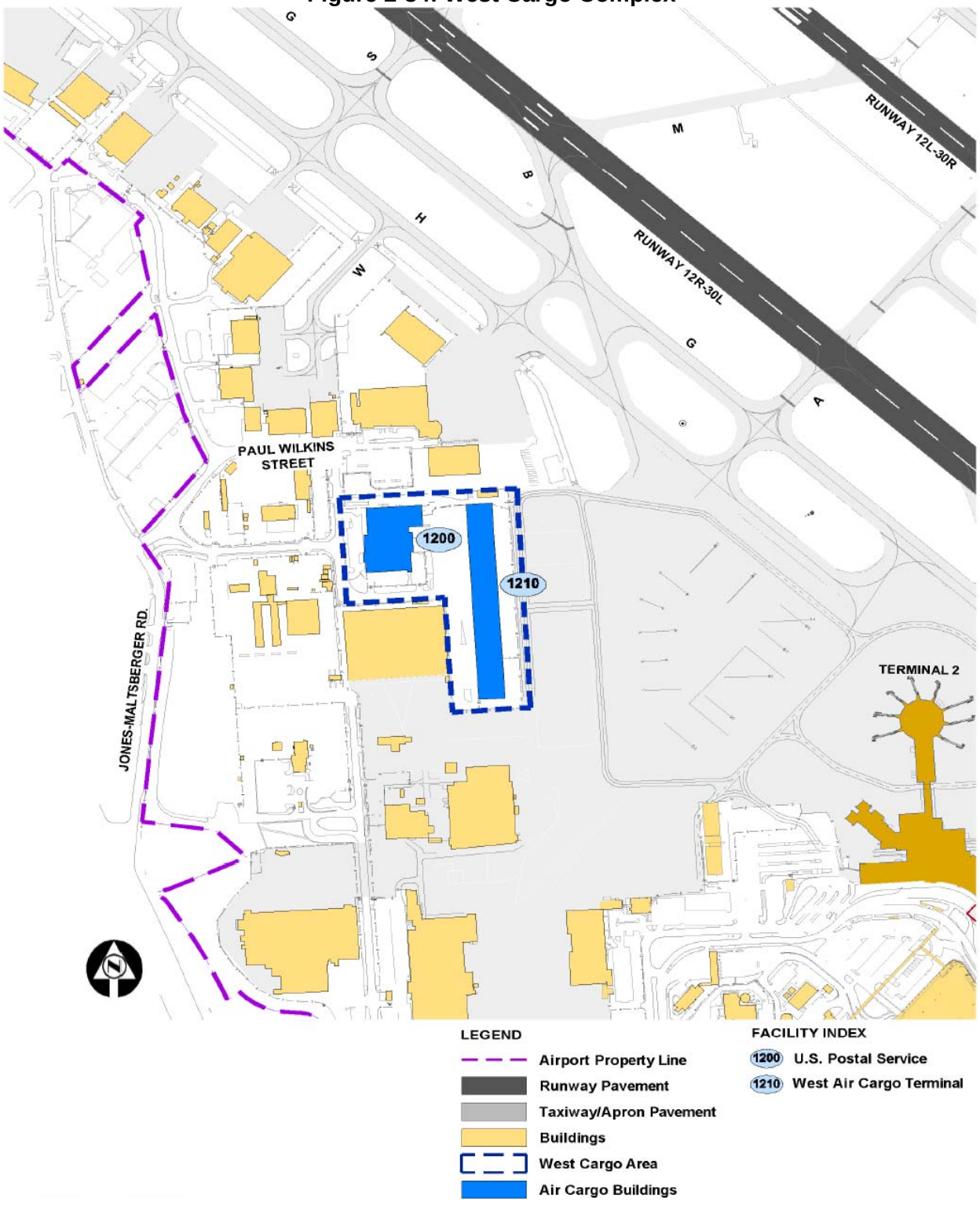
West Cargo Complex

The West Cargo Complex is located along Jones Maltsberger Road west of Taxiway H, as shown on **Figure 2-34**. It accommodates the U.S. Postal Service (USPS) and the West Air Cargo Terminal.

The West Air Cargo Terminal is owned by the City of San Antonio and partially leased to cargo handlers and airlines. The facility consists of an 82,560-square-foot warehouse on the western side of the airfield. Lessees include:

- **Cargo Airport Services**: Cargo Airport Services leases 8,000 square feet of warehouse space and provides cargo handling services for US Airways, Frontier Airlines, United Airlines, and Continental Airlines. Cargo Airport Services processed approximately 742,000 pounds of cargo per month in 2009, down from 960,000 pounds per month in 2008.
- **Southwest Airlines Air Cargo**: Southwest Airlines leases 3.5 bays and processes an average of 370,000 pounds of cargo monthly, based on 2009 activity.
- **Delta Air Lines and Mexicana de Aviacion:** Delta and Mexicana lease 3,525 square feet of warehouse space. In 2009, an average of 46,000 pounds of cargo a month were processed, down from 84,000 pounds a month in 2008.
- **American Airlines:** American Airlines leases four bays, providing 9,600 square feet of space. In 2009, an average of 253,000 pounds of cargo per month was processed, down from 345,000 pounds a month in 2008.

Figure 2-34: West Cargo Complex



The U.S. Postal Service operates a 52,000-square-foot customer service and shipping facility located on a 2-acre site in the West Cargo Complex. The site can be accessed via John Saunders Road. The facility processes an average of 120,000 pounds of incoming and outgoing mail weekly, transported through agreements with commercial passenger carriers operating from the Airport; specifically Continental Airlines, United Airlines, and American Airlines.

East Cargo Complex

The East Cargo Complex, illustrated on **Figure 2-35,** is located along Wetmore Road, east of Runway 3-21 and Taxiway Q. It accommodates CEVA Logistics (Eagle Global Logistics), DHL, FedEx, and United Parcel Service (UPS).

DHL and FedEx occupy adjacent buildings. DHL leases a 23,700-square-foot building on a 10.2-acre parcel. FedEx leases a 35,000-square-foot building on a 9.4-acre parcel immediately north of the DHL facility. Both buildings have truck loading facilities – truck docks and drive-through parking – and customer and employee parking. Air Operations Area (AOA) access is through the buildings or via electric gates from the parking area.

DHL ramp area, with a total surface of 38,000 square yards, can accommodate up to six ADG II aircraft. The FedEx ramp area can accommodate up to three ADG IV aircraft on 34,600 square yards of ramp space.

CEVA Logistics is a supply chain company located on Wetmore Road. It processes an average of 60,000 pounds of cargo a week in a 40,200-square-foot building, located on a 2.2-acre leased site.

UPS operates a 5,100-square-foot building on Wetmore Road in the northwest corner of the Airport. The ramp area can accommodate up to four ADG IV aircraft on 44,760 square yards of ramp space.

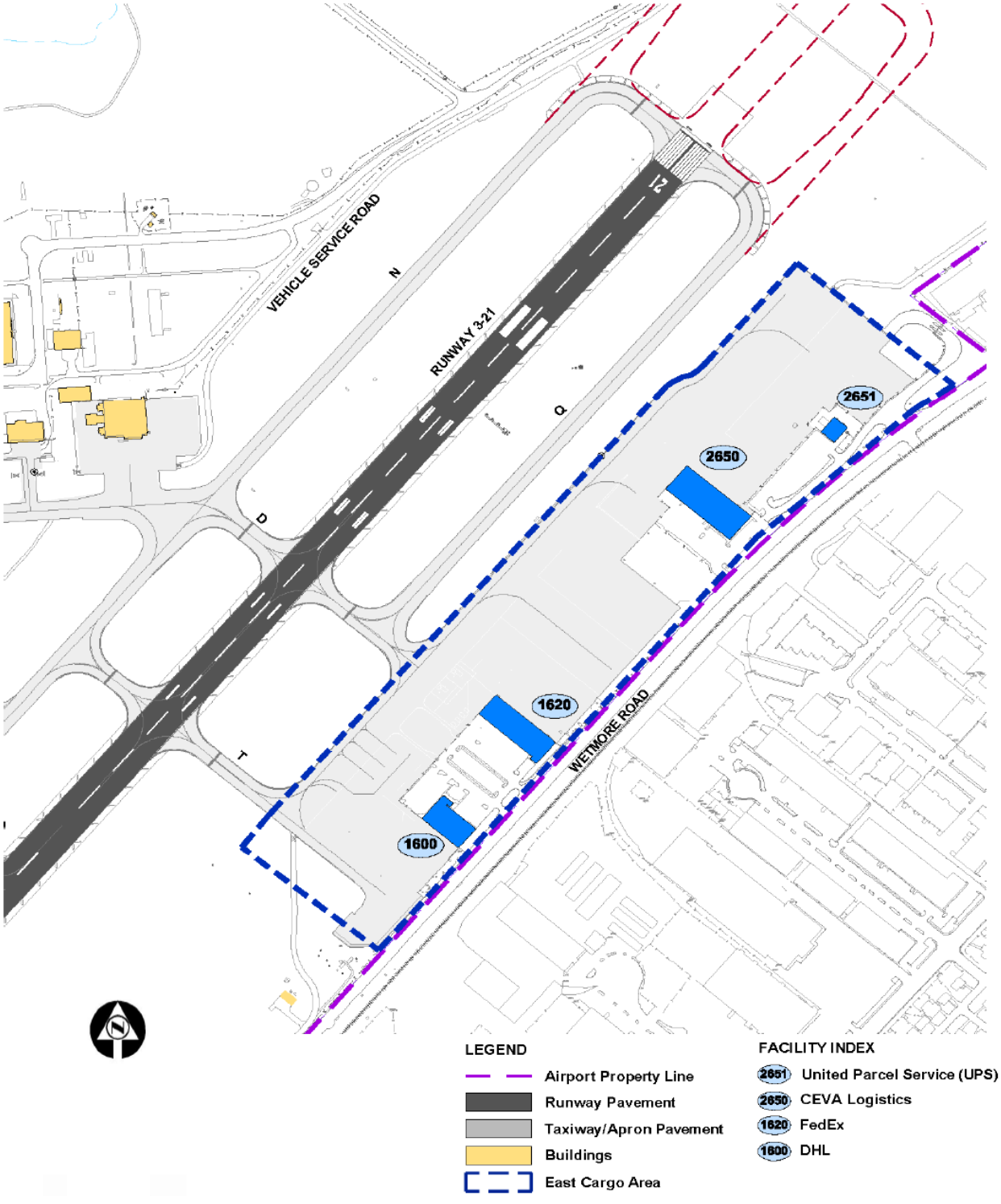
Cargo facility characteristics are summarized in **Table 2-9**.

Table 2-9: Air Cargo Facilities

Facility	Ground Lease (acres)	Building (square feet)	Ramp Area (square yards)	Aircraft Positions	Landside (square feet)
West Cargo Complex					
USPS	2.0	52,000	No ramp	None	35,120
West Air Cargo - Entire Building	5.5	83,204	6,220 [1]	None	101,700
West Air Cargo - Cargo only	2.0	29,525	2,210 [1]	None	36,060
Delta Air Lines/ Mexicana de Aviacion	0.2	3,525	260 [1]	None	4,340
Cargo Airport Services	0.5	8,000	600 [1]	None	9,760
Southwest Airlines Air Cargo	0.6	8,400	630 [1]	None	10,250
American Airlines	0.6	9,600	720 [1]	None	11,710
East Cargo Complex					
CEVA Logistics	2.2	40,200	No ramp	None	53,820
DHL	10.2	23,700	37,990	6 ADG II	76,870
FedEx	9.4	35,000	34,590	3 ADG IV	65,040
UPS	12.7	5,100	44,760	4 ADG IV	143,500

[1] The ramp area at the West Air Cargo Terminal is used for ground support vehicle loading and storage.

Figure 2-35: East Cargo Complex



2.3.5 General Aviation

General aviation consists of all civil aircraft operations not classified as either air carrier or air taxi/commuter operations, including business travel, medical transport, law enforcement, and recreational flying operations.

The west general aviation area at SAT, as shown on **Figure 2-36**, occupies 68 acres northeast of the terminal area, along Sandau Road and Jones Maltsberger Road. Additional facilities shown on **Figure 2-37** are located to the east, near the terminal area and in the southern portion of the Airport.

Fixed Base Operators

SAT is home to six fixed base operators that provide a wide range of services to general aviation users of the Airport.

Landmark Aviation (Building 1050)

Landmark Aviation is located on the west side of the Airport off Sandau Road and immediately west of Taxiways H and Y (see Figure 2-36). The Landmark facilities encompass 34,485 square feet of space, including office and hangar space, and 32,470 square yards of apron space. Landmark's above ground fuel farm consists of one 104,000-gallon Jet A fuel storage tank and one 12,000-gallon Avgas fuel storage tank. Fuel is transported to the farm via tanker trucks.

Landmark Aviation leases 26,400 square yards of apron on the east side of the Airport near the cargo facilities to provide additional aircraft parking storage space.

Signature Flight Support (Buildings 1080, 1090, 1095)

Signature Flight Support is located on the west side of the Airport off Paul Wilkins Street (see Figure 2-36). Taxiway access to the site is provided by Taxiways H and V. Signature operates three buildings totaling 32,000 square feet of office space, 71,000 square feet of hangar space, and 1,110 square yards of apron.

Signature's fuel farm consists of two 20,000-gallon Jet A storage tanks, one 5,000-gallon Avgas storage tank, one 2,500-gallon unleaded gasoline storage tank, and one 2,500-gallon diesel fuel storage tank.

Aeronev (Building 1140)

The Aeronev facility is located west of the airfield, adjacent to the Signature Flight Support site (see Figure 2-36). Airfield access is provided via Taxiway W. Aeronev provides FBO and aircraft maintenance services. Facilities consist of a 14,300-square-foot hangar and 1,200 square yards of apron space.

Figure 2-36: West General Aviation Facilities

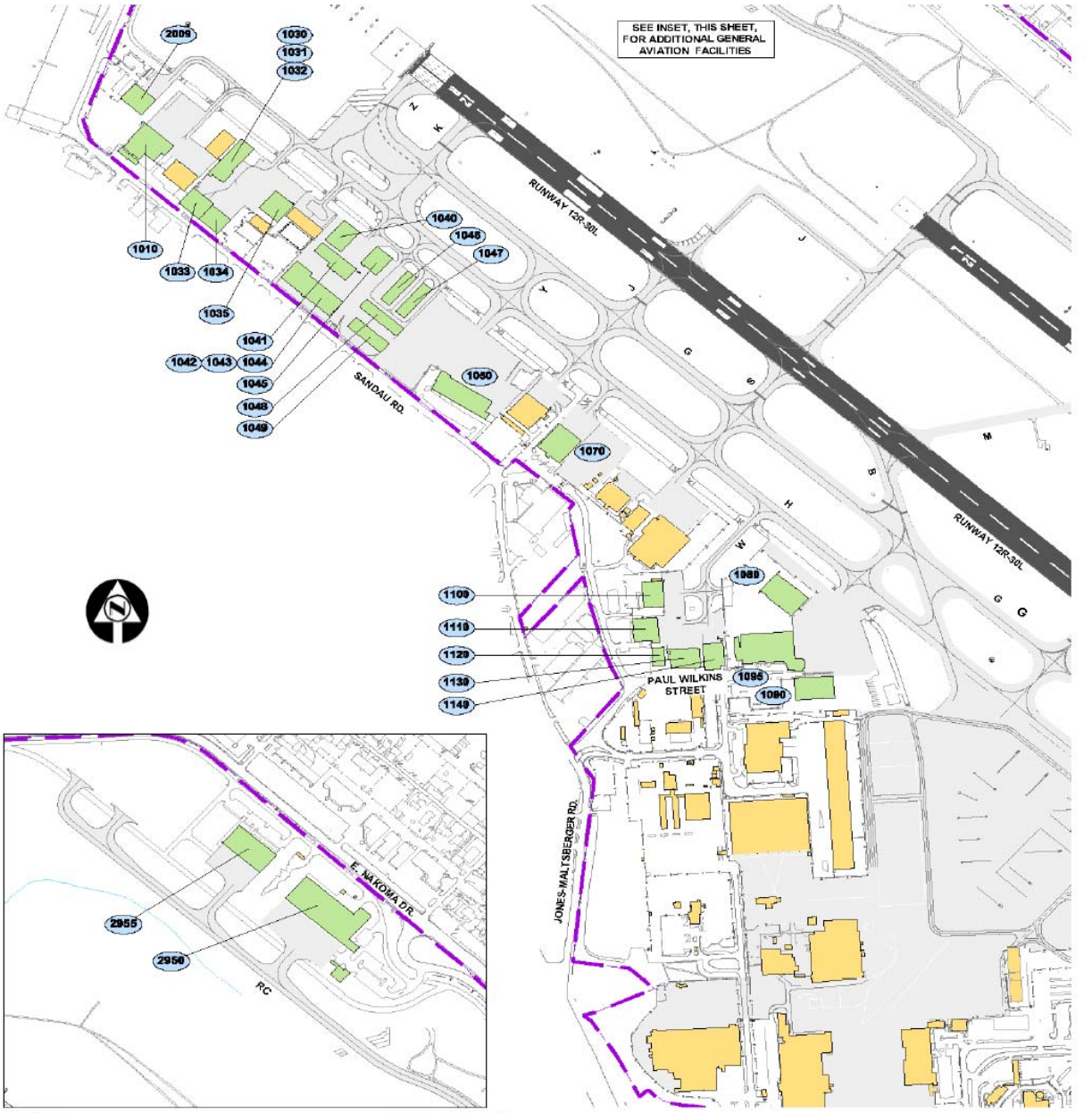
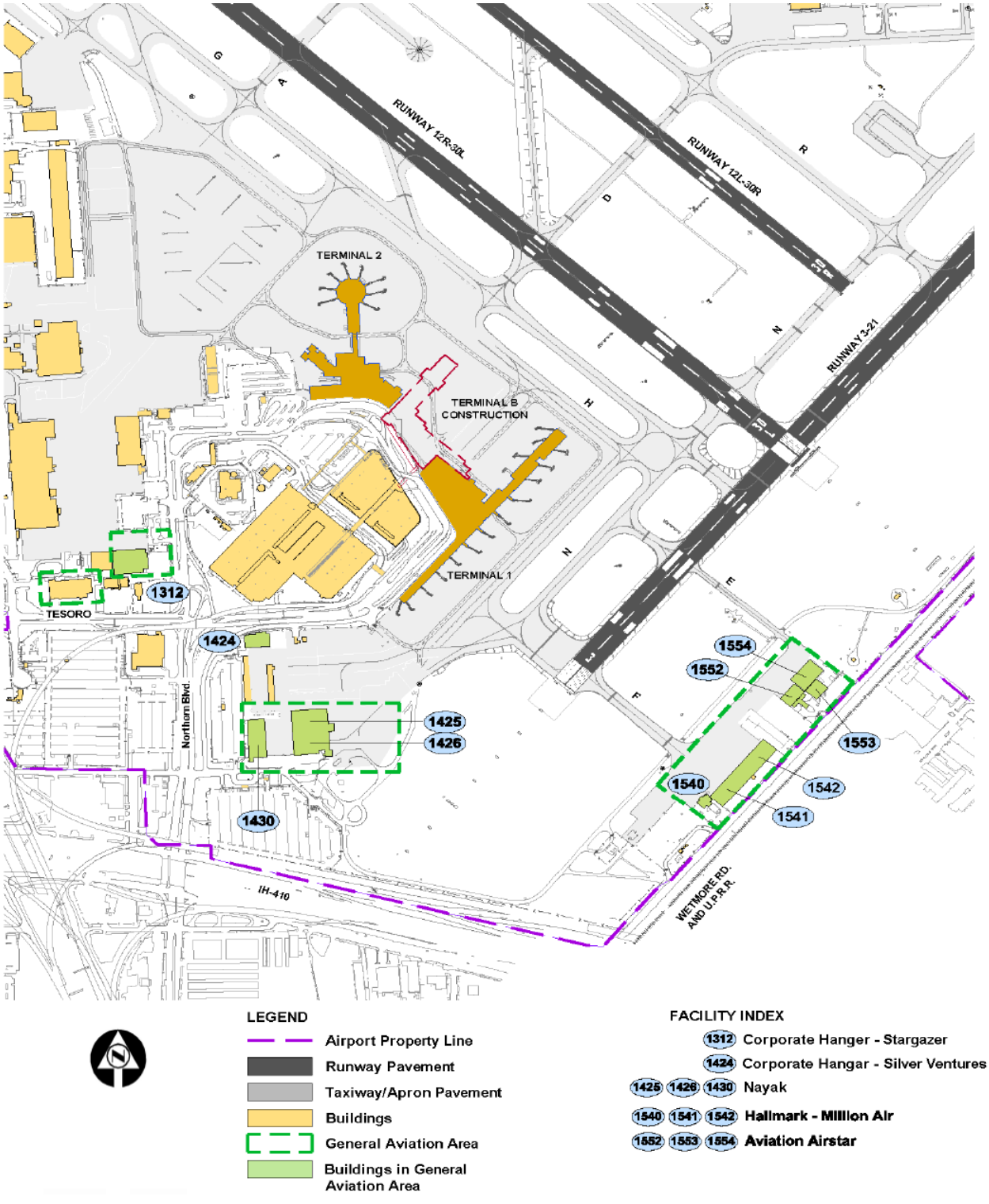


Figure 2-37: East General Aviation Facilities



Nayak Aviation (Buildings 1425, 1426, 1430)

Nayak Aviation facilities are located in the south corner of the Airport, as depicted on **Figure 2-37**. Vehicular access is via Northern Boulevard and taxiway access is via Taxiway N. Facilities include two buildings totaling 60,000 square feet of conventional hangar space and 24,000 square yards of ramp space.

Hallmark/Million Air (Buildings 1540, 1541, 1542)

Million Air operates a 5,000-square-foot facility on the east side of the Airport off Wetmore Road and immediately south of Runway 3-21 (see Figure 2-37). Taxiway access is via Taxiway F.

Million Air leases space to Flight Time, a company specializing in aircraft leasing, charters, and shared aircraft ownership. Flight Time's fleet consists of two jet aircraft and three propeller aircraft, and the company plans to expand its fleet in the near future.

Adjacent to the Million Air FBO facilities is the Hallmark College Aviation Campus, which occupies two buildings totaling 60,000 square feet of hangar and office/ classroom space. The school is planning to lease additional acreage and hangar space in the near future.

Aviation Airstar (Buildings 1552, 1553, 1554)

Aviation Airstar is located on the east side of the airfield (see Figure 2-37). Vehicular access is via Wetmore Road and airfield access is via Taxiway E. Aviation Airstar's facilities consist of three buildings totaling 27,000 square feet of hangar space and a 7,800 square yard apron on a 2.5-acre site.

The FBO facilities are summarized in **Table 2-10**.

Table 2-10: Fixed Base Operator Facilities

Operator	SAT Building #	Terminal/Office Space (square feet)	Hangar Space (square feet)	Apron Area (square yards)	Parcel Size (acres)	Based Aircraft
Landmark Aviation West Location	1050	--	31,210	26,680	6.7	2 jet aircraft, 11 propeller aircraft, 1 helicopter
Landmark Aviation East Location	--	--	--	26,390	5.5	--
Signature Flight Support	1080 1090 1095	32,000	71,000	32,850	8.4	15 aircraft
Aeronev	1140	-	14,300	1,180	0.6	-
Nayak Aviation	1425 1426 1430	-	87,420	24,000	7.5	4 jet aircraft, 21 propeller aircraft
Hallmark/Million Air	1540 1541 1542	10,500	39,000	26,110	9.0	10 jet aircraft, 5 propeller aircraft
Aviation Airstar	1552 1553 1554	11,404	27,003	7,840	2.5	-

Corporate User Facilities

A substantial number of corporate general aviation tenants are located at the Airport. Several corporate hangar facilities are located primarily on the west side of the airfield. Some new facilities have recently been completed on the north side of the airfield. The corporate user facilities are summarized in **Table 2-11**.

Table 2-11: Corporate User Facilities

Operator/User	SAT Building #	Apron Area (square yards)	Hangar Space (square feet)	Office Space (square feet)
Nustar	2009	1,340	10,000	4,000
Clearchannel	1010	11,730	26,000	4,000
Security Airpark - Conventional Hangars	1030-1035 and 1039-1045	19,530	122,570	-
Security Airpark - T-Hangars	1046-1049	8,550	49,620	-
USAA	1070	2,510	23,700	-
Lewis Energy	1100	2,190	14,760	-
H.B. Zachry	1110	1,110	10,000	-
Holt Aviation	1120, 1130	1,540	20,330	-
Stargazer	1312	2,960	29,550	-
Silver Ventures	1424	-	12,690	-
Tesoro	n/a	7,450	30,000	-
Valero	2950	6,000	36,000	13,000
H. E. Butt Grocery Company (H-E-B)	2955	4,960	12,000	-

2.3.6 Aircraft Manufacturing and Maintenance

Cutter Aviation (Buildings 1020, 1021)

Cutter Aviation offers aircraft maintenance services, aircraft sales, and leasing services from facilities on the west side of the Airport, along Sandau Road, as shown on **Figure 2-38**. Airfield access is provided by Taxiway H. Cutter Aviation's facilities consist of two hangars, encompassing 11,000 square feet and 14,000 square feet, and a 3,110-square-yard apron.

AHR Avionics (Buildings 1060, 1061)

AHR Avionics specializes in aircraft repair, installation of avionics equipment, and aircraft maintenance (see Figure 2-38). AHR's facility is located on the west side of the Airport adjacent to Taxiways H and J. Vehicular access to the facility is via Sandau Road. The maintenance facility totals 22,000 square feet – 15,000 square feet of hangar space and 7,000 square feet of office space. AHR Avionics is allocated 2,520 square yards of apron space.

Hawker Beechcraft (Buildings 1085, 1086, 1087, 1089, 2083, 2084)

Hawker Beechcraft operates an aircraft maintenance facility on the west side of the Airport, as depicted on Figure 2-38. Taxiway S provides access to the site. Hawker Beechcraft occupies six buildings totaling 24,000 square feet of office space, 30,000 square feet of hangar space, and 15,750 square feet of workshop space. Hawker Beechcraft also uses an 8,400-square-yard apron.

San Antonio Aerospace (Buildings 1220, 1225, 1230, 1231, 1232, 1235, 2205)

San Antonio Aerospace provides aircraft maintenance and aircraft modification services for narrowbody and widebody aircraft. Its facilities are located in the West Aircraft Maintenance Complex off John Saunders Road, as shown on Figure 2-38. Airfield access is provided by Taxiways H and A.

San Antonio Aerospace occupies seven buildings on a 36-acre parcel totaling 560,000 square feet of hangar facilities and 98,000 square feet of workshop space for aircraft component repair, aircraft overhaul, and aircraft fabrication services.

Aero Sky (Buildings 1800, 1805)

Aero Sky is a licensed Federal Aviation Regulations (FAR) Part 145 *Repair Stations* repair facility located on the north side of the airfield near Taxiways N and D (see **Figure 2-39**). Aero Sky specializes in routine and heavy maintenance for both corporate and scheduled airlines and services B-727/737, Boeing business jets, and DC-9/MD80 aircraft, with an emphasis on interior refurbishments, letter check maintenance, issuance of Supplemental Type Certificates of aircraft modifications, and special modifications. Aero Sky facilities include 7,000 square feet of office space and 40,000 square feet of workshop space in two separate buildings, and 8,890 square yards of apron space. Vehicular access to the complex is via the Airport's NE Entrance Road.

Emivest Aerospace Corporation (Building 1880)

Emivest Aerospace Corporation, formerly known as Sino Swearingen Aircraft Corporation, is a U.S.-based aircraft manufacturing company headquartered at SAT. Emivest Aerospace Corporation produces a small business jet, the Swearingen SJ30-2.

Emivest facilities at the Airport are located north of Runway 12L-30R, immediately west of the M7 Aerospace complex (see Figure 2-39). Airfield access is provided via Taxiway D. Vehicular access is via Skyplace Boulevard. Emivest currently leases an 11.7-acre site that accommodates a 97,500-square-foot manufacturing facility, a 4,500-square-foot flammable storage facility, and a 16,500-square-yard apron.

In June 2006, Emivest announced that it would expand its manufacturing center at the Airport by leasing an additional 22 acres. The additional land will be used to construct a new 220,000-square-foot manufacturing and assembly plant expected to produce 100 aircraft per year.

M7 Aerospace (Buildings 1820, 1825, 1830, 1833, 1835, 1840, 1845, 2836)

M7 Aerospace, formerly known as Fairchild-Dornier Aviation, occupies a 22-acre leased site on the north side of the Airport near Taxiways R and N. Vehicular access is via the NE Entrance Road. M7 Aerospace activities include aircraft manufacturing; aircraft maintenance, repair, and overhaul (MRO); and aircraft parts and product support. Facilities include 14,440 square yards of apron space and eight buildings totaling 405,000 square feet of manufacturing and support space.

Cessna Corporation (Building 1890)

The Cessna San Antonio Citation Service Center is located on the north side of the Airport, immediately adjacent to the Aircraft Rescue and Fire Fighting (ARFF) Station (see Figure 2-39). Airfield access is provided via Taxiways R and A. Cessna provides a range of planned and unplanned maintenance services for Cessna Citation aircraft. The 7-acre parcel accommodates a 60,680-square-foot facility opened in 1997 and a 12,670-square yard apron. An average of 20 aircraft a week are repaired at the facility.

Characteristics of the facilities described above are summarized in **Table 2-12**.

Figure 2-38: West Aircraft Maintenance Facilities

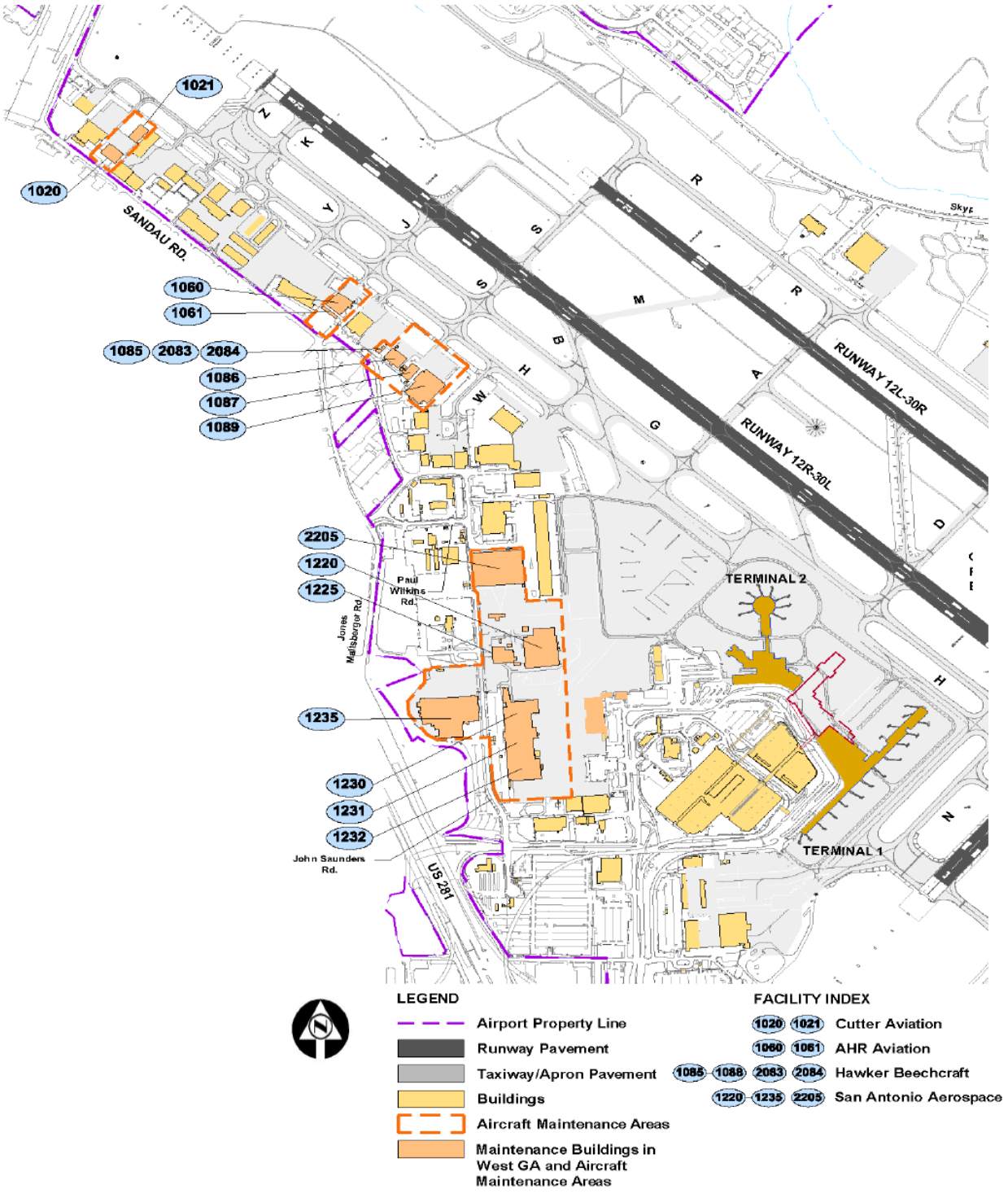


Figure 2-39: North Aircraft Maintenance Facilities

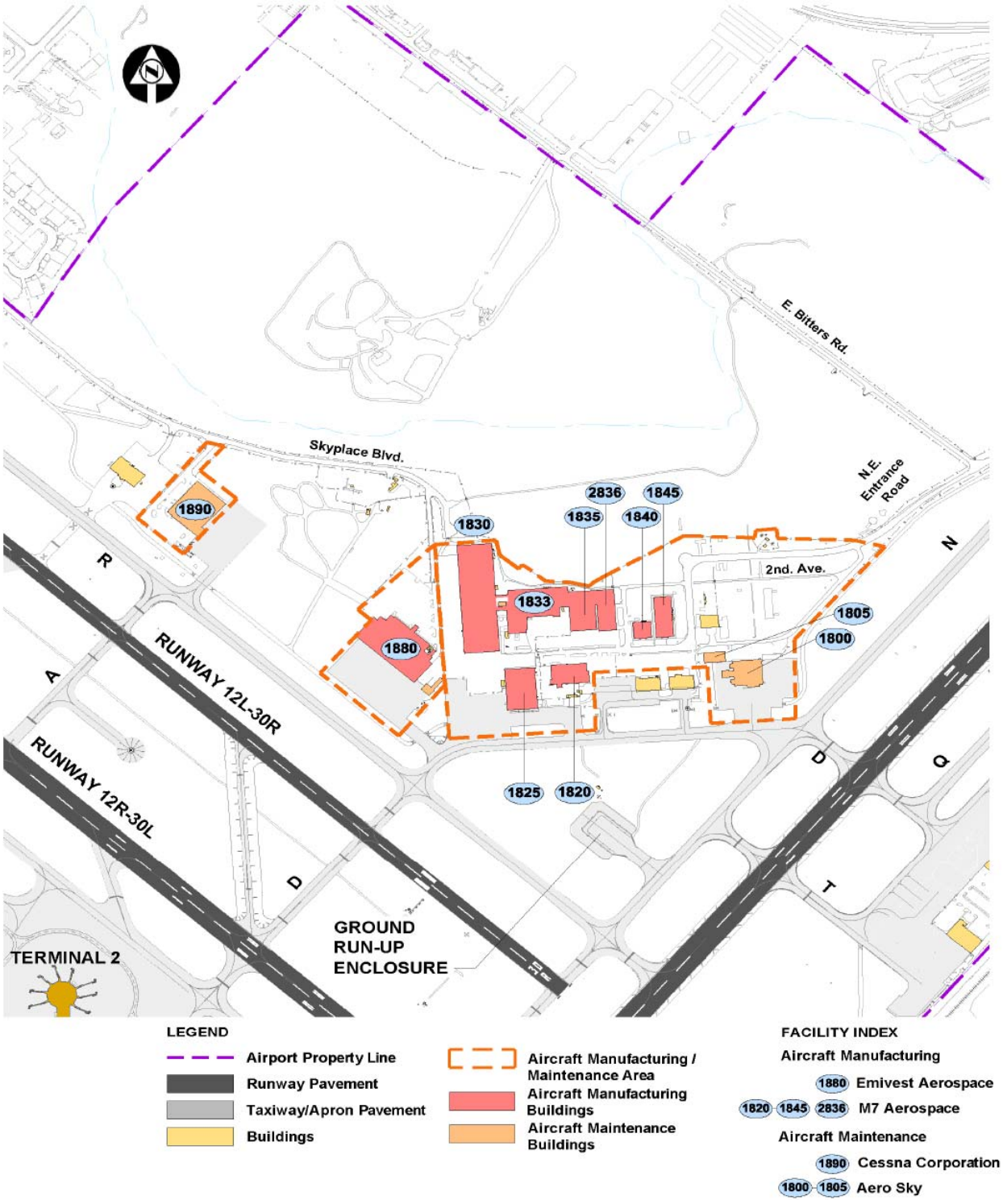


Table 2-12: Aircraft Maintenance and Manufacturing Facilities

Activity	Location	Operator	Activity	Land (acres)	Facility (square feet)	Apron Area (square yards)
Aircraft Maintenance	West side	Cutter Aviation	Aircraft maintenance services, aircraft sales, and leasing services	2.0	25,000	3,110
		AHR Avionics	Aircraft repair, avionics installation, and aircraft maintenance	2.5	22,000	2,520
		Hawker Beechcraft	Aircraft maintenance	4.5	69,750	8,400
		San Antonio Aerospace	Aircraft maintenance and aircraft modification services for narrowbody and widebody aircraft	36.0	658,000	n/a
	North side	Aero Sky	Aircraft repair	15.0	47,000	8,890
		Cessna Corporation	Aircraft maintenance	6.8	60,680	12,670
Aircraft Manufacturing	North side	Emivest Aerospace Corporation	Aircraft manufacturing	11.7	97,500	16,330
		M7 Aerospace	Aircraft manufacturing; aircraft maintenance, repair, and overhaul	22.0	405,000	14,440

2.3.7 Airline and Airport Support

Airline Support Facilities

Airline support facilities are dedicated to supporting passenger and cargo airline operations. These facilities include airline catering and flight kitchen, ground support equipment (GSE) storage and maintenance, and fuel storage and dispensing facilities. The locations of these facilities are shown on **Figure 2-40**.

Airline Catering and Flight Kitchen

Gate Gourmet Catering Services leases a 28,500-square-foot facility located off Airport property, at the intersection of Isom Road and Gulfdale Drive. Gate Gourmet provides in-flight catering amenities to the passenger airlines serving the Airport. Gate Gourmet operates three 16-foot trucks and one 12-foot truck. Catering vehicles access the AOA at Gate 79 on the south end of the West Cargo Facility.

Ground Support Equipment Storage and Maintenance

The airlines serving the Airport maintain GSE storage and maintenance facilities in the West Cargo Building (Building 1210).

Fuel Storage Facilities (Building 1531)

As shown on Figure 2-40, the Airport's primary fuel farm, which provides storage for fuel used by air carrier aircraft, is located off Wetmore Road, immediately south of Taxiway F and Runway 3-21. Allied Aviation owns the facility on land leased from the City.

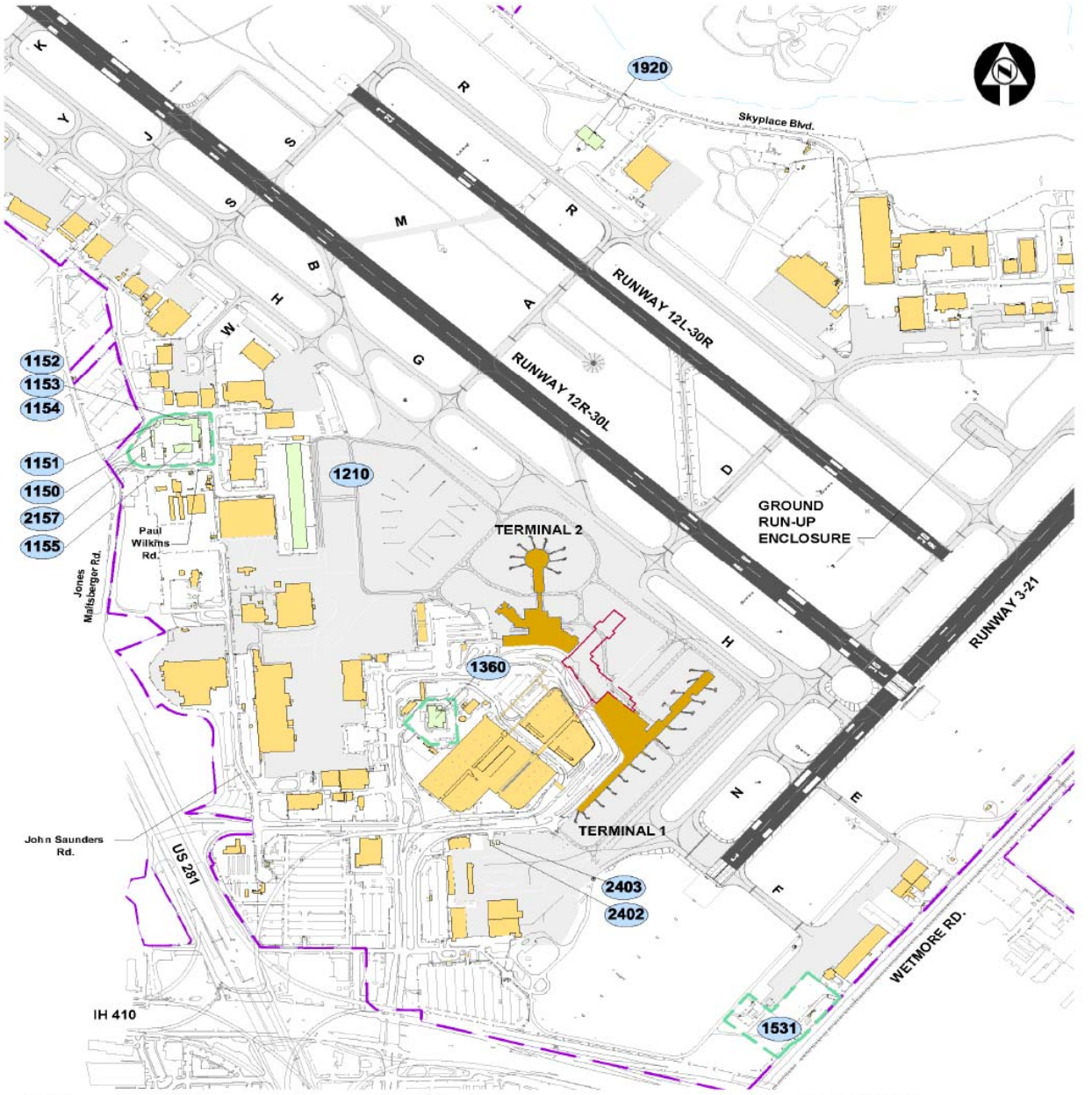
There are two 420,000-gallon and three 10,000-gallon tanks capable of storing 870,000 gallons of fuel at any given time. The tanks are used as follows:

- Jet A: two 420,000-gallon above ground storage tanks
- Avgas: 10,000-gallon above ground storage tank
- Unleaded: 10,000-gallon above ground storage tank
- Diesel: 10,000-gallon above ground storage tank

The tanks are supplied from standard tanker trunks, with a daily average of 30 to 40 8,000-gallon delivery trucks. Allied Aviation operates 22 tanker trucks ranging in size from 1,800 gallons to 10,000 gallons to deliver fuel to air carrier aircraft and FBOs. The fuel is piped from the storage tanks to the load point by underground pipe. The truck load point is off the southeast corner of Building 1426 past the south RON pad.

In addition to the fuel farm, several on-Airport tenants have separate storage tanks to hold different types of fuel. Specific facilities are described in Section 2.3.5 above.

Figure 2-40: Support Facilities



Ground Runup Enclosure

The noise produced by aircraft engine runup maintenance tests at SAT is of concern to the surrounding community, especially during nighttime hours. To reduce noise exposure, engine runup tests are conducted inside a sound insulated ground runup enclosure (GRE). The GRE at the Airport was constructed in 2002 and is adjacent to Taxiway N. It is a three-sided enclosure measuring 28 feet high, 249 feet wide, and 275 feet deep, sized to accommodate a B-747-400 aircraft.

Triturator (Buildings 2402, 2403)

A triturator serving all airlines is located south of the terminal complex, adjacent to the Silver Ventures hangar and the Nayak Aviation facilities.

Airport Support Facilities

Airport support facilities include the ARFF Station, Airport maintenance, and the ATCT. Airport support facilities are described below and shown on Figure 2-40.

Aircraft Rescue and Fire Fighting (ARFF) Station (Building 1920)

Personnel at the SAT ARFF facilities are responsible for all Airport fire fighting and emergency services. The Airport's ARFF Station is located on 4.5 acres on the north side of the Airport along Skyplace Boulevard north of Taxiway R. The 20,500-square-foot primary ARFF Station contains space for living, administration, training, and equipment storage. It also includes six bays for vehicle and truck storage.

Two elements determine the level of ARFF capability at an airport—the size of the aircraft operating at the airport and the number of daily aircraft departures. SAT is classified as a Class I airport with scheduled and unscheduled large air carrier aircraft (30+ seats and scheduled small aircraft (10-30 seats). The Airport also has an ARFF Index C designation. Index C indicates that the longest aircraft using the Airport on a regular basis is shorter than 159 feet.

Airport Maintenance Facilities (Buildings 1150, 1151, 1152, 1153, 1154, 1155, 2157)

Airport maintenance facilities are located in the western portion of the Airport, at the intersection of John Saunders Road and Paul Wilkins Road. The facilities occupy an area of approximately 4.7 acres and consist of seven buildings and a storage yard totaling 5,200 square feet of office space and 20,900 square feet of workshop space. Maintenance is performed onsite unless the vehicle can be taken out of service, in which case it is sent offsite to a City maintenance shop. All equipment is stored onsite. Fueling facilities, with storage for 10,000 gallons of unleaded and 10,000 gallons of diesel fuel, are also provided.

Airport Traffic Control Tower (Building 1360)

FAA staff at SAT primarily operate from the ATCT, located southwest of the terminals near the parking garage. The ATCT was built in 1986 to a height of 240 feet (eye level is 200 feet above ground level). The initial phase of aircraft departures and the final phase of aircraft arrivals are controlled from the ATCT. Air traffic control at the Airport is handled through air/ground communications. The base ATCT accommodates Terminal Radar Approach Control (TRACON) and FAA Technical Operations.

2.3.8 Existing Utilities

Several areas of the Airport are under construction or construction was recently completed, including connection to or extension of existing Airport utility services. In the terminal area, the new long-term parking garage has been completed, and the two-level access road system and Terminal B are under construction. Much of the utility infrastructure planning in this area has included making allowances for the future construction of Terminal C. Documentation for some of the utility construction in this area has been obtained and the existing utility documentation is being updated. Airport utilities consist of water, storm drainage, sewer, telephone, natural gas, electricity, and the chilled water/steam system.

Water

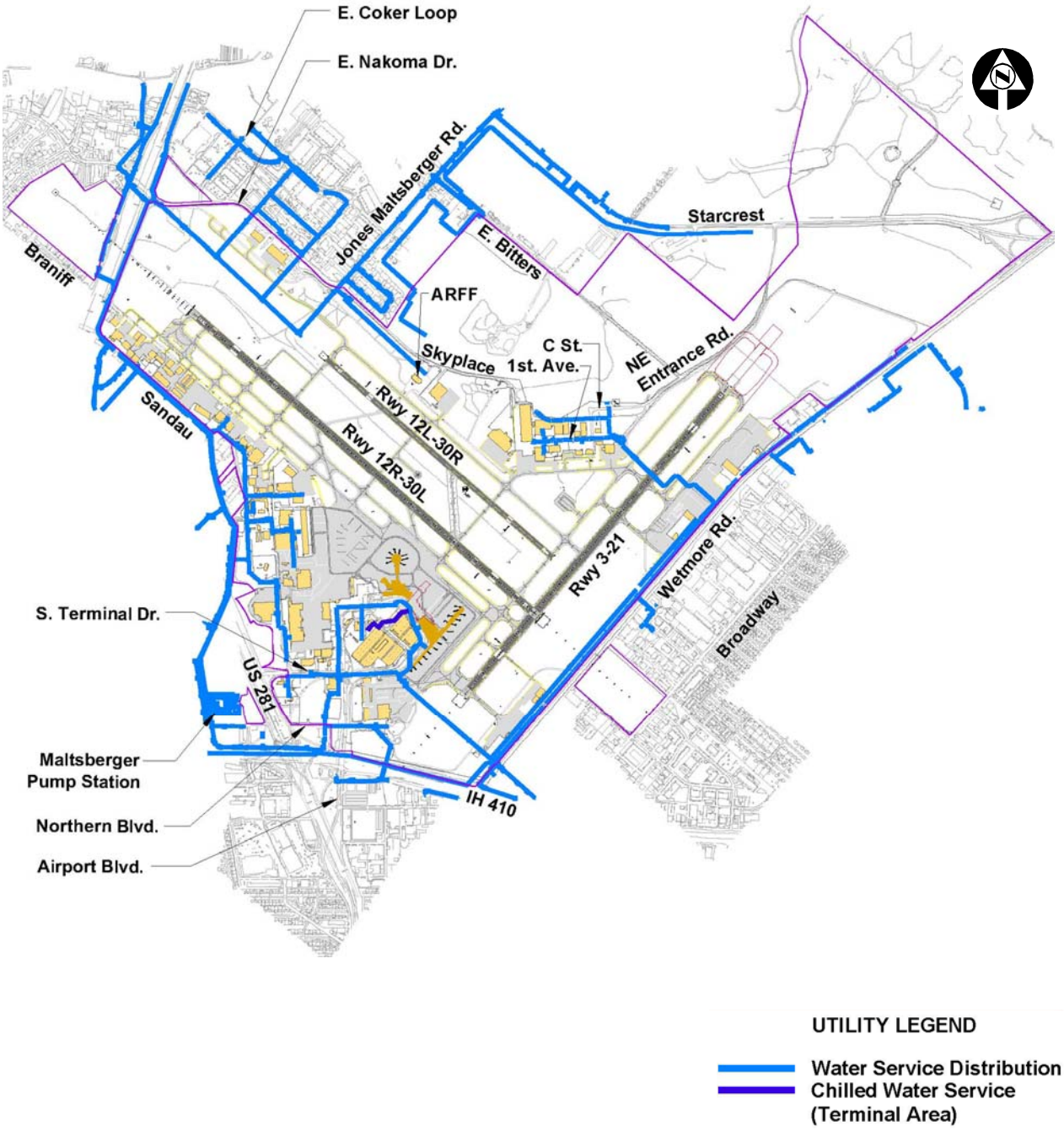
The City of San Antonio Water System (SAWS) supplies potable and fire water to Airport facilities. The Airport lies within the SAWS pressure zone PZ-5 service area. The SAWS 2007 *Water Statistics*, which is available on the SAWS website, indicates that PZ-5 has a number of pump stations including a total of 13 primary wells and two active secondary wells with a total well pump capacity of 154 million gallons per day (mgd). The pump stations have a total high service (distribution) pumping capacity exceeding 181 mgd, ground storage tank facilities with a total capacity of 25.96 million gallons, and elevated storage tank capacity of 5.47 million gallons. The Maltsberger Pump Station, located in the vicinity of Northern Boulevard and Jones Maltsberger Road across U.S. 281 from the Airport, provides the primary service for the Airport vicinity. It has six wells, 7.5 million gallons of ground storage capacity, and seven high-service pumps with a total pumping capacity of 62.2 mgd. Discussions with SAWS personnel indicated that no CIP projects are planned in the immediate area of the Airport. Water plant and area distribution system service levels are believed to be sufficient to provide for future expansion of the Airport facilities.

Figure 2-41 shows the existing water distribution system serving the Airport. The SAWS water system includes parallel 30-inch and 36-inch transmission lines that extend north of the Maltsberger Pump Station in the Jones Maltsberger Road and Sandau Road rights-of-way to U.S. 281 west of the Airport. The transmission lines continue north in the east U.S. 281 right-of-way to a point north of Braniff Street, then the 36-inch line crosses to the west right-of-way and the 30-inch line narrows to a 24-inch line. Both lines then continue northward beyond the limits of the Airport property.

On the north side of the Airport, a 16-inch SAWS line extends from U.S. 281 east to East Nakoma Drive. The 16-inch line narrows to a 12-inch line at East Coker Loop and continues east along Nakoma Street and Skyplace Boulevard, ending near C Street. A 12-inch line located beneath 1st Avenue parallels the last 800 feet of the Skyplace Boulevard line and extends further east beneath Runway 3-21 to the 8-inch main beneath Wetmore Road. The two 12-inch lines are separated by approximately 400 feet and are not connected.

On the east side of the Airport, an 8-inch line extends north in the Wetmore Road right-of-way from a 16-inch line at Loop 410, to a 12-inch line located at the northeast corner of the Airport property. A 12-inch line parallels this 8-inch line in the Broadway Street right-of-way, with several 8-inch lines cross connecting in this reach. Along the south side of the Airport, a 20-inch SAWS transmission line is located along the side of the Loop 410 right-of-way.

Figure 2-41: Existing Utilities – Water Service



Primary service to the 12-inch loop in the terminal rea is provided by a 16-inch main that extends from the 30-inch transmission line beneath Jones Maltsberger Road, south in the east right-of-way of U.S. 281, then east along South Terminal Drive to its intersection with Airport Boulevard. The 12-inch loop is also connected by an 8-inch line extending south to the 20-inch transmission line beneath Loop 410, and an 8-inch line extending southeast to the 8-inch line beneath Wetmore Road. Service to the cargo and hangar areas west of the terminals is provided by the 12-inch line beneath John Saunders Road, or to various 8-inch lines connecting into the SAWS water system along the Airport boundary.

SAT has 28 active water accounts with SAWS. Most of these accounts are for standalone guard shacks or landscape irrigation systems. The big accounts are for Terminals 1 and 2, the West Cargo Facility, the Airport Maintenance Yard, and the ARFF Station. Based on this information, the leaseholders on the airfield that do not lease space in the terminal have separate SAWS water meters. The leaseholders in the terminal do not have individual SAWS water meters.

Airport Storm Drainage

SAT lies within the watershed area of two primary drainage systems: the Upper San Antonio River and Salado Creek. The San Antonio River receives discharges from a small area of the Airport fronting Jones Maltsberger Road south along U.S. 281 and east along Loop 410 and also drainage from the terminal and parking garage areas west of Terminals 1 and 2. The major portion of the Airport drainage, including the runways and the building areas along East Nakoma Street and Skyplace Boulevard, discharges to Salado Creek or its tributaries. Two tributaries and a portion of Salado Creek are contained within the northern areas of the Airport property. A substantial portion of the Airport property between Skyplace Boulevard and Starcrest Drive and at the north end of the Airport east of NE Entrance Road and south of Starcrest Drive is within the 100-year floodplain of Salado Creek.

The onsite drainage system for the Airport consists of numerous underground storm sewer systems that collect storm water discharges from roof drains, area inlets, and surface swales, and convey such discharges to outfall systems on the west perimeter of the Airport, or directly to Salado Creek and its tributaries north of the Airport. The storm sewer system is shown on **Figure 2-42**.

Sewer

Wastewater effluent collection and treatment is provided by SAWS. The Airport is located within the service area of the Dos Rios Wastewater Treatment Plant. The 2007 SAWS *Water Statistics* posted on the SAWS website indicates that the plant has a permitted flow capacity of 125 mgd, and an actual average daily influent flow of 93.34 mgd. Discussions with SAWS personnel indicate that no major CIP projects are planned in this area, and trunk collection line and plant capacity are believed to be sufficient to accommodate future development within the Airport area.

The existing Airport sanitary sewer collection system is shown on **Figure 2-43**. The west side of the Airport property is served by a 15-inch to 18-inch sanitary trunk that extends south of U.S. 281 in the Sandau Road and Jones Maltsberger Road rights-of-way, and then east of the U.S. 281 right-of-way to South Terminal Drive. At this point, the 18-inch sewer trunk crosses to the

west side of U.S. 281 and continues south. On the north side, a 27-inch SAWS sewer is generally adjacent to Salado Creek, portions of which lie within the Airport boundary.

Figure 2-42: Existing Utilities – Storm Drainage

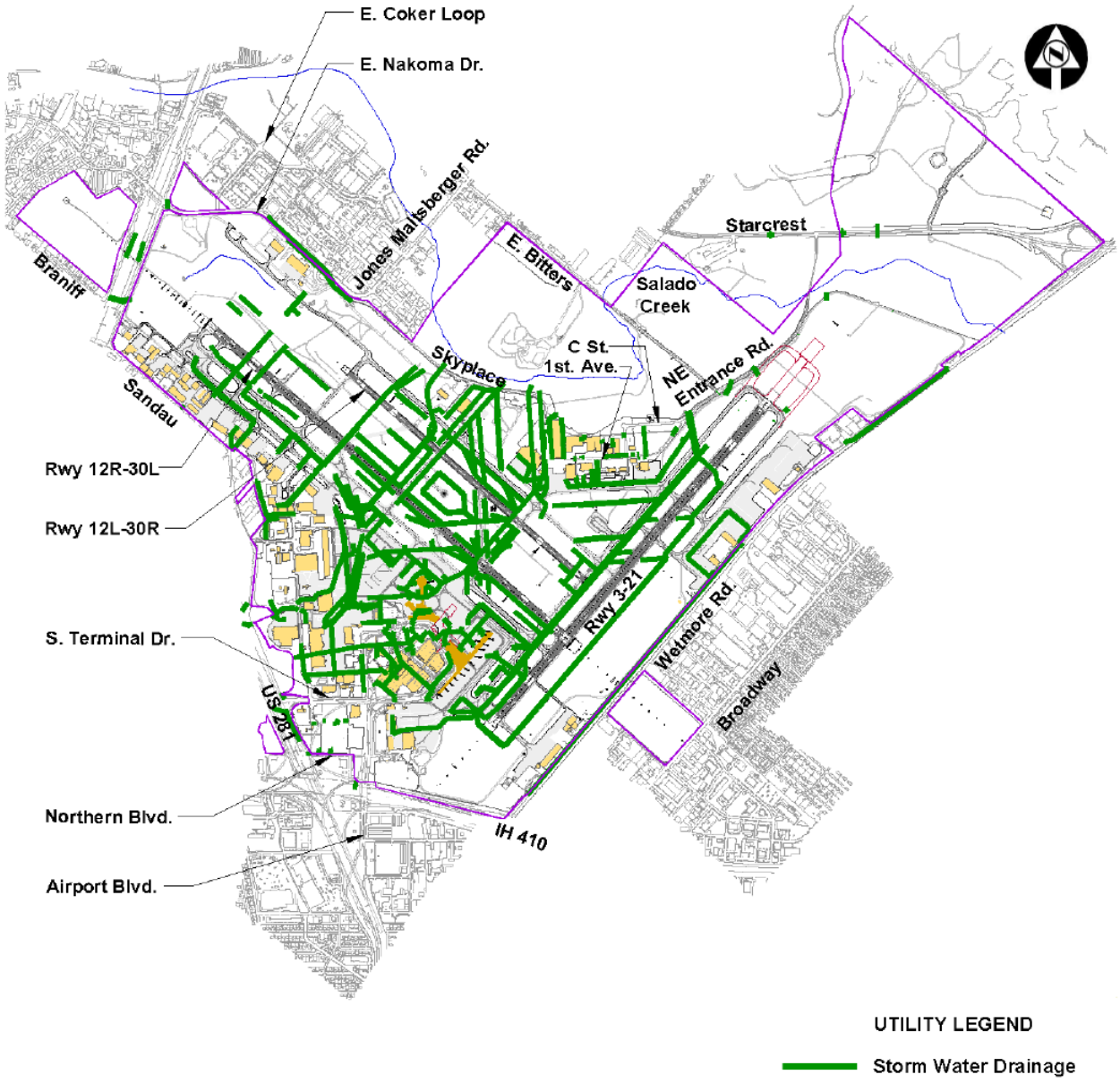
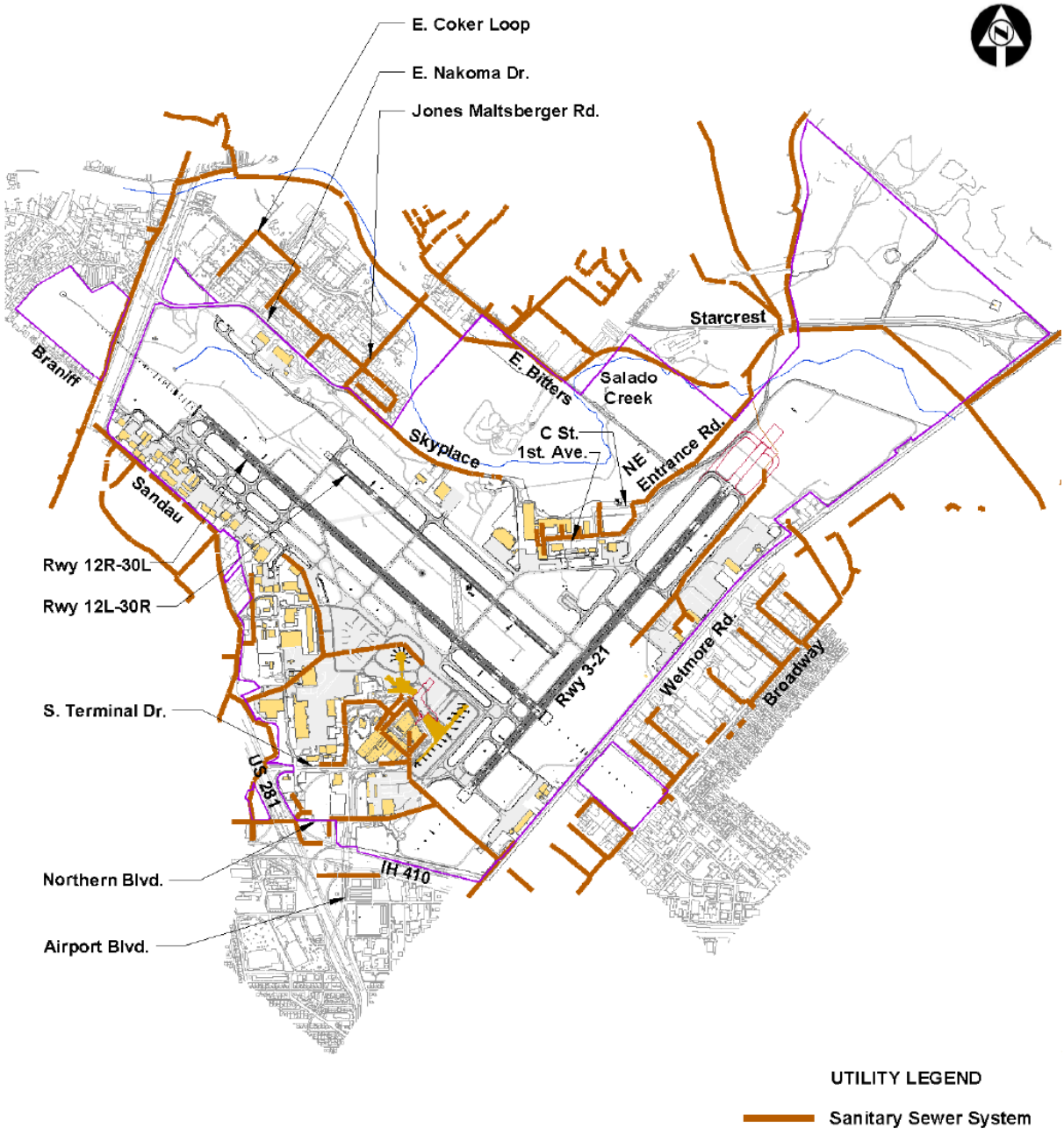


Figure 2-43: Existing Utilities – Sanitary Sewer



The northeast area of the Airport is served by internal laterals that connect to this sewer. The southeast corner of the Airport is served by a 10-inch sewer located beneath Wetmore Road from south of Loop 410 approximately 500 feet north of the Loop 410 right-of-way. No other sanitary sewer service is located beneath Wetmore Road on the east boundary of the Airport.

The terminal area is served by two primary sewer laterals. The first is a 12-inch sewer extending from the vicinity of Terminal 2, west along North Terminal Road and south along West Terminal Road to a 16-inch sewer beneath South Terminal Road. The 16-inch sewer then extends west to the 18-inch sewer trunk beneath U.S. 281. The second 10-inch and 12-inch sewer extends south and southeast from the area of Terminal A and connects to the 10-inch sewer beneath Wetmore Road at the southeast corner of the Airport.

Telephone

Terminals 1 and 2 are served by a 100 megabits per second fiber optic line with telephone and Internet service provided by AT&T. The airlines and tenants inside the terminals use independent service and are not part of the Airport's telephone backbone. The airlines and tenants in Terminal B will be part of the Airport's backbone. There are plans to incorporate Terminal 1 airlines and tenants into the Airport backbone in the future. The TSA, FAA, and CBP telecommunications are separate from the Airport's. All tenants on the airfield are independent of the Airport's telecommunication systems. The Airport does have a public WiFi network in the terminals that is maintained by the City's Information Technology Department. See **Figure 2-44**.

Natural Gas

Natural gas service is provided to the Airport by CPS Energy, which provides all natural gas and electrical service in the area. Discussions with CPS personnel revealed that they believe the Airport and surrounding area are adequately served and no major gas line distribution infrastructure improvements are planned at this time. The onsite gas distribution system is shown on **Figure 2-45**.

SAT has eight active natural gas accounts with CPS. These accounts are for the terminals, the West Cargo Facility, the Airport Maintenance Yard, and the ARFF Station. Based on this information, it was determined that the leaseholders on the airfield that do not lease space in the terminal have separate gas meters and accounts with CPS.

Electricity

Electrical service is also provided to the Airport by CPS Energy, which provides all natural gas and electrical service in the area. Discussions with CPS personnel revealed that they believe the Airport and surrounding area are adequately served and no major electrical distribution infrastructure improvements are planned at this time.

Onsite service at the Airport is provided by a combined system of overhead electrical distribution lines and underground electrical conduit. The system is shown on **Figure 2-46**. The cargo, general aviation and maintenance areas west of Runway 12R-30L and the terminal area are served by overhead lines, as are the facilities along Wetmore Road and part of the aircraft manufacturing areas around First Avenue and C Street. The terminal area, as well as the ARFF

Station and the section of the Aircraft Maintenance Area accessed from Skyplace Boulevard, are served by underground conduit.

SAT has 60 active electrical accounts with CPS. Most of these accounts are for standalone guard shacks, irrigation controllers, or site lighting. The big accounts are for Terminals 1 and 2, the West Cargo Facility, the Airport Maintenance Yard, and the ARFF Station. Based on this information, it was determined that the leaseholders on the airfield that do not lease space in the terminal have separate electrical meters with CPS. The terminals have several accounts.

Chilled Water/Steam System

SAT has its own central utility plant. A new plant, under construction, will be capable of supplying the cooling needs for Terminal 1, Terminal B, and proposed Terminal C. The new central utility plant is operational as of February 2010.

Figure 2-44: Existing Utilities – FAA Ductbank

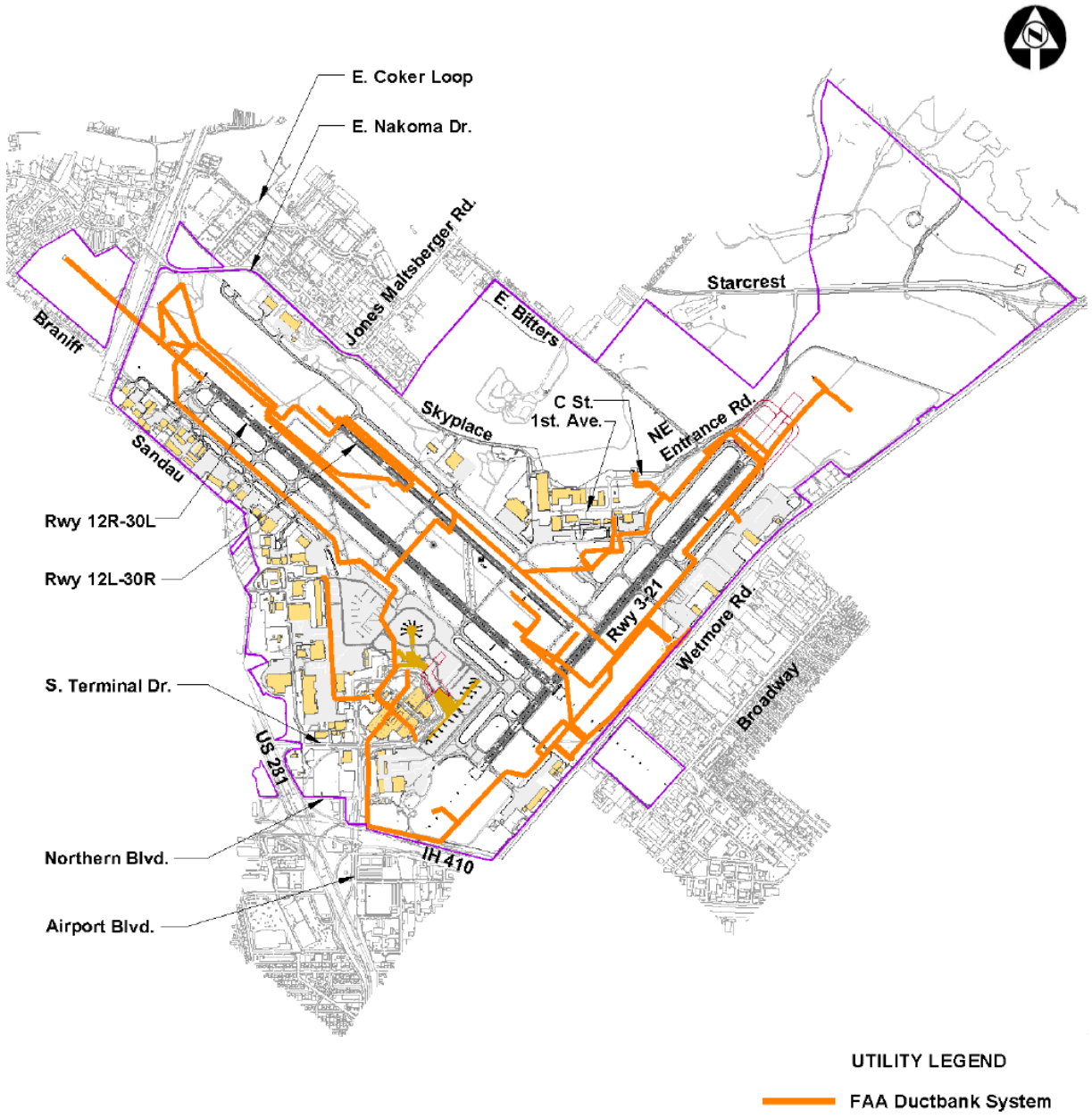


Figure 2-45: Existing Utilities – Natural Gas

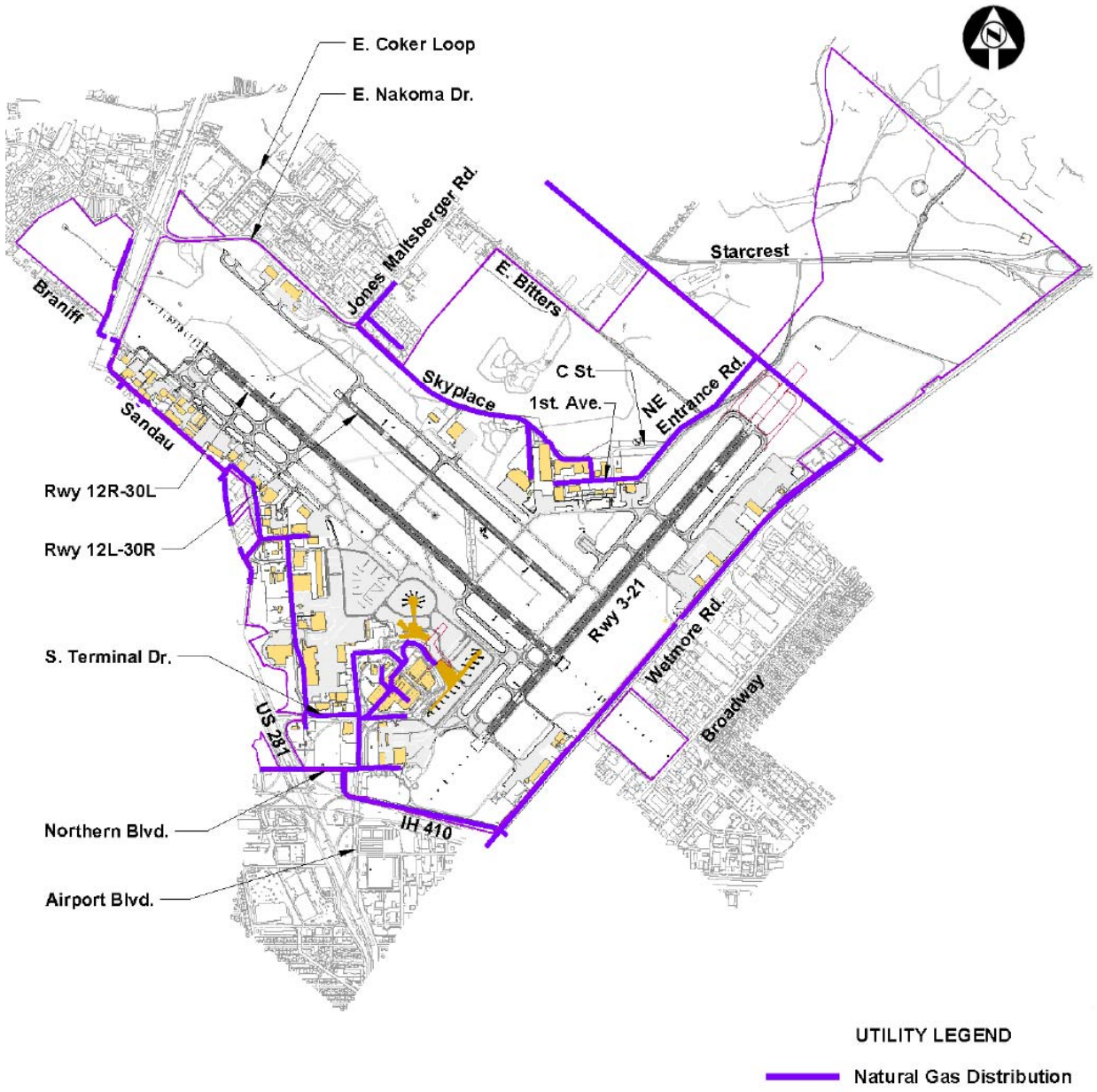
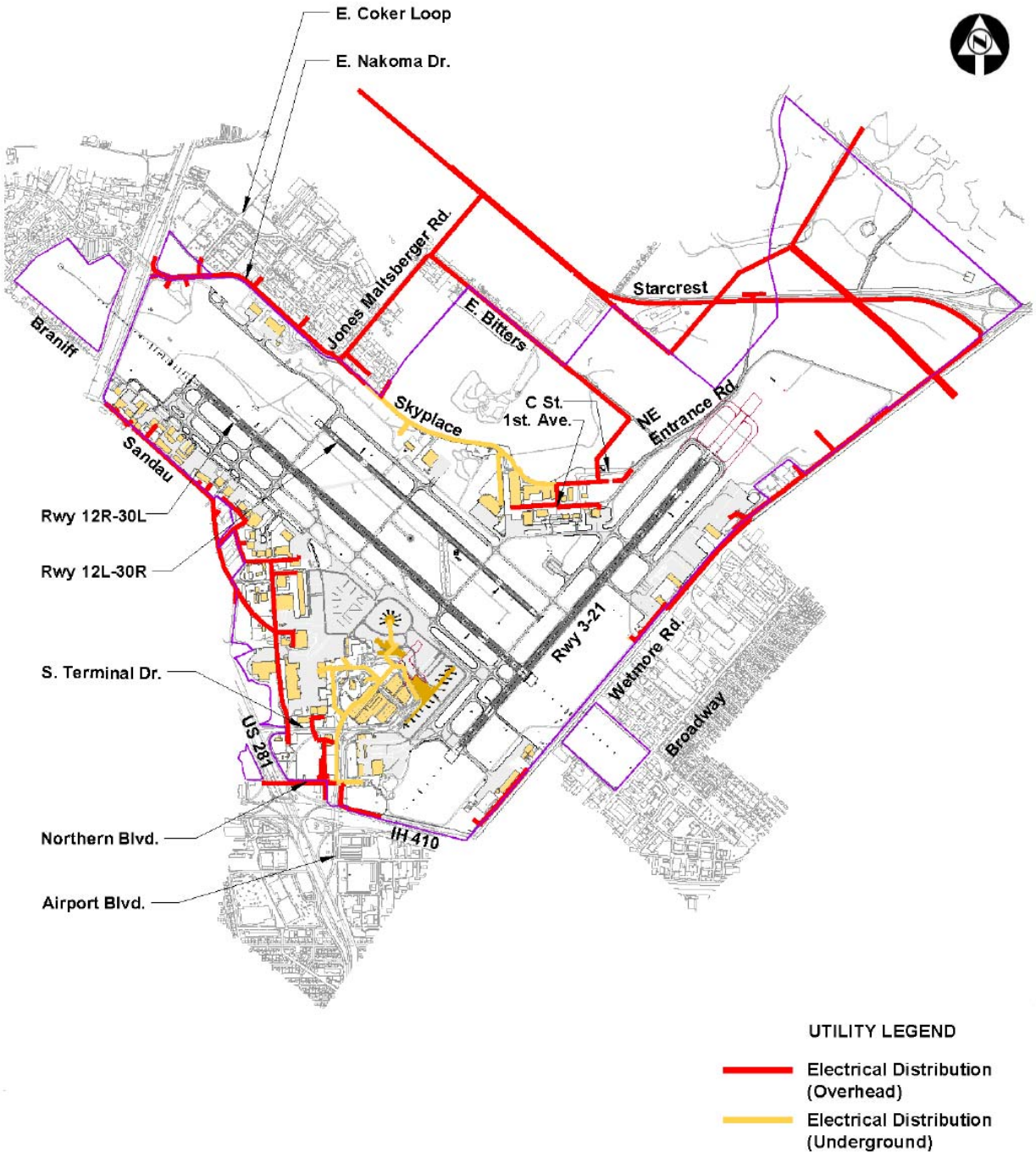


Figure 2-46: Existing Utilities – Electrical Service



2.4 ENVIRONMENTAL CONDITIONS

The environmental conditions that are unique to this Airport, including those that are most likely to require more thorough examination during the evaluation of proposed projects and their alternatives, are discussed in this section.

2.4.1 Air Quality

Air quality has become both a health and an economic issue in the San Antonio region.[1] By 2011, the U.S. Environmental Protection Agency (EPA) is expected to designate Bexar County as noncompliant with the air quality standard for ozone (O_3). Although air quality rules and regulations have not had a significant effect on the environmental review of projects at SAT in the past, changes in the permitting and approval processes are likely to occur, which could make air quality a critical planning constraint in the region in the very near future.

National Ambient Air Quality Standards

The Clean Air Act requires the U.S. EPA to establish National Ambient Air Quality Standards (NAAQS) for six "criteria" pollutants considered harmful to public health and the environment: carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM), O_3, and lead (Pb). The standards were set at the level required to provide an ample margin of safety to protect the public health. The U.S. EPA established two types of national air quality standards: primary and secondary. Primary standards are intended to protect public health, including the health of sensitive populations, such as asthmatics, children, and the elderly. Secondary standards are intended to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

The Clean Air Act Amendments of 1990 are the most recent version of the law enacted in 1970 to decrease air pollution. Since the 1990 amendments were enacted, the U.S. EPA has taken further steps to improve air quality in marginal areas. Most recently, the U.S. EPA has tightened its health standard for O_3, introduced a new standard for fine particulate matter ($PM_{2.5}$), and proposed a much stricter standard for NO_2. As operation of an airport causes emissions of these criteria pollutants, tougher air quality standards have the potential to complicate airport development projects.

Ambient air quality in the San Antonio region is generally good except for a few days in the summer when ground-level ozone begins to exceed the national health standard. According to the U.S. EPA, the San Antonio region (Bexar, Comal, Guadalupe, and Wilson counties) has been designated as being in attainment for all criteria pollutants, including ozone. However, in 2008, when the U.S. EPA increased the 8-hour standard for ground level ozone pollution, from 0.08 part per million (ppm) to 0.075 ppm, the San Antonio region was already close to exceeding the previous standard; therefore, it is unlikely that the revised standard will be met.

By early 2011, the U.S. EPA is expected to designate Bexar County as being in violation of the 2008 revised 8-hour ground level ozone standard. When that occurs, the Texas Commission on Environmental Quality (TCEQ) will have three years to develop an air quality State Implementation Plan (SIP) that demonstrates how the ozone standard will be met. During the

[1] City of San Antonio, Office of Environmental Policy, Air Quality (2009).

intervening period, TCEQ will work with local governments to establish emission budgets (limits) and enforceable control measures that would become effective when the SIP is approved.

When the U.S. EPA announces its determination and Bexar County is added to the list of nonattainment areas, the Airport will be subject to General Conformity requirements under the Clean Air Act. Under FAA rules implementing the Clean Air Act and the National Environmental Policy Act (NEPA), airports located in designated nonattainment areas must conform to the SIP. Conformity to a SIP means that a proposed project or activity must not:

- Cause or contribute to any new violation of any standard
- Increase the frequency or severity of an existing violation of any standard
- Delay the timely attainment of any standard, interim emission reduction, or other milestone

The General Conformity evaluation process includes an applicability analysis, preparation of emission inventories, and a comparison of the net emissions caused by the proposed project or activity with established thresholds. Demonstrating conformity can be a simple or complex process depending on the type and quantity of emissions associated with the proposed project or activity. However, in the worst case, if the project-related emissions do not conform to the SIP, then the project cannot go forward. This is an especially important issue for the FAA and airport sponsors that are proposing large-scale construction projects within U.S. EPA-designated nonattainment areas.

Emerging Issues (Hazardous Air Pollutants and Greenhouse Gasses)

In addition to the U.S. EPA's criteria air pollutants discussed above, toxic air pollutants and greenhouse gas (GHG) emissions are creating important new challenges for airport projects undergoing NEPA review. Toxic air pollutants, also known as hazardous air pollutants (HAPs), are those pollutants that are known or suspected to cause cancer or other serious health effects. The U.S. EPA is currently working with State, local, and tribal governments to reduce releases of 187 pollutants into the environment. Greenhouse gasses trap heat in the earth's atmosphere and contribute to climate change. The U.S. EPA is creating a nationwide database of GHG emissions, an important first step to reducing emissions.

Similar to many other air pollutants, the combustion of fossil fuel causes or contributes to HAPs and GHG emissions. As a result, there is growing public interest and concern with respect to the potential effects that airport development and aircraft operations have on human health and the environment. To the extent that HAPs and GHG emissions from an airport project may cause significant human health effects or other impacts, airport sponsors and the FAA are being increasingly tasked with identifying these air quality issues and addressing related concerns during the NEPA process.

2.4.2 Biotic Communities

SAT consists of a large contiguous area that provides a wide range of habitat types that support a variety of indigenous species. Vegetative communities range from landscaped grasslands to open fields to riparian woodlands located along streams and bottomlands. However, no threatened or endangered species are present on the Airport nor are wetlands or bodies of water. Similar to all airport sponsors, the City strives to balance environmental sustainability

practices with FAA safety requirements, which otherwise obligate the City to take preventive measures to mitigate potential wildlife hazards.

Cover Types and Habitat

Given the nature and extent of industrial land uses on Airport property, habitat suitability increases from the south to the north. The south side of the Airport consists mostly of built land and maintained areas with little or no habitat value. The center of the Airport is dominated by an expansive mixed-grass complex, albeit highly fragmented by paved surfaces (e.g., runways, taxiways, roadways). The vast amount of grassland open space is not common in the area and is attributed to a manmade condition that is maintained by an active mowing regime. FAA safety requirements necessitate short-grass management within the AOA to improve line-of-sight visibility and to discourage bird breeding territory and nest locations. The majority of the wildlife are located on the north side of the Airport where upland grasses transition to lowland woods and plant communities along Salado Creek. A riparian corridor provides an edge plant community with a high level of diversity and a connection with plant and animal species offsite.

Few if any aquatic communities are present on the Airport. Although Salado Creek and its tributaries, Mud Creek and Lorence Creek, are designated "waters of the U.S.," they flow only during and immediately after precipitation. Intermittent pockets of wetland vegetation have been observed within plant communities along the stream margins and where drainage channels outfall, but no delineated wetlands or other bodies of water are located on the Airport.

Threatened/Endangered Species and Critical Habitat

U.S. Fish and Wildlife Service (FWS) sources indicate that there are 20 federally listed threatened/endangered species with potential or known presence in Bexar County and that there are seven designated critical habitat areas. Critical habitat is a geographic area that contains features essential for the conservation of threatened/endangered species and that may require special management and protection. Texas Parks and Wildlife Department (TPWD) sources indicate that there are 13 State-listed threatened/endangered species in Bexar County, 6 of which are among those on the U.S. FWS list.

According to available literature, the U.S. FWS and TPWD have previously determined that no federal- or State-listed species are known to occur at the Airport and that there is little or no potential for occurrence.[2] U.S. FWS maps indicate that no federally listed critical habitat is located on or adjacent to the Airport. The nearest critical habitat area is located approximately one mile southeast of the Airport along Nacogdoches Road.

Given the notable absence of free-flowing streams, rivers, lakes, or other bodies of water on the Airport, there is no Essential Fish Habitat at the Airport.

Wildlife Hazard Management

The FAA has established minimum requirements for Wildlife Hazard Management Plans (WHMPs). Such plans include all seven elements required by the FAA under FAR Part

[2] Booz | Allen | Hamilton, *Final Environmental Assessment for Proposed Actions at San Antonio International Airport,* September 2007.

139.337(f) *Certification and Operations: Land Airports Serving Certain Air Carriers*. These elements are listed below:

1. The persons who have the authority and responsibility for implementing the plan.
2. Priorities for needed habitat modification and changes in land use identified in the wildlife hazard assessment (e.g., wildlife hazard or natural resource assessment), with target dates for completion.
3. Requirements for and, where applicable, copies of local, state, and federal wildlife control permits.
4. Identification of resources to be provided by the certificate holder for implementation of the plan.
5. Procedures to be followed during air carrier operations, including at least:
    a. Assignment of personnel responsibilities for implementing the procedures;
    b. Conduct of physical inspections of the movement area and other areas critical to wildlife hazard management sufficiently in advance of air carrier operations to allow time for wildlife controls to be effective;
    c. Wildlife control measures; and
    d. Communication between the wildlife control personnel and any ATCT in operation at the airport.
    e. Periodic evaluation and review of the WHMP for:
    f. Effectiveness in dealing with the wildlife hazard; and
    g. Indications that the existence of the wildlife hazard, as previously described in the wildlife hazard assessment, should be reevaluated
6. A training program to provide airport personnel with the knowledge and skills needed to carry out the WHMP.

2.4.3 Compatible Land Use and Noise

The noise produced by aircraft overflights continues to be an important issue for SAT even though new studies show that noise levels around the Airport have declined in recent years. Updated noise exposure maps were prepared in 2009 to ensure that the Airport continues to be eligible for federal funding for its sound insulation program. To the extent that future projects at the Airport could change the noise exposure maps, noise-related issues must be addressed early in the planning process.

Noise Compatibility Program

The objective of aviation-related land use planning is to guide incompatible land uses away from the airport environs and to encourage compatible land uses to locate around airport facilities. One of the best mechanisms available to address aircraft noise compatibility planning is an FAR Part 150 Noise Compatibility Study. FAR Part 150, *Airport Noise Compatibility Planning,* sets standards for airport operators to use in documenting noise exposure and for establishing programs to minimize noise-related land use incompatibilities. An FAA-approved FAR Part 150 study includes two principal elements:

Noise Exposure Maps (NEMs)
Noise Compatibility Program (NCP)

NEMs depict noise exposure resulting from aviation activity at an airport over a land use base map that shows both compatible and incompatible land uses; the NCP sets forth the measures that an airport operator has taken, or has proposed, to reduce existing incompatible land uses and prevent additional incompatible land uses from being developed within the area covered by the NEMs. Typically, recommended noise abatement measures can be categorized as follows:

- Operational measures, such as changes in runway use or changes in flight-track location.
- Preventive measures, such as compatible land use zoning or noise overlay zoning within off-airport noise exposure areas.
- Remedial measures, such as property acquisition or sound insulation of residential property exposed to significant aircraft noise.

The Aviation Department has long maintained an NCP for the Airport. The original NCP was adopted in 1991 and revised in 1997, 2002, and 2009. The current FAR Part 150 study prepared by Wyle in 2009, *Noise Exposure Map Report and Noise Compatibility Program Update for San Antonio International Airport,* was revised to include NEMs for existing conditions (2009) and future conditions (2014), and to reflect the use of the 2014 NEM as the proposed noise mitigation boundary for the Airport's ongoing Residential Acoustical Treatment Program (RATP). The RATP is designed to reduce aircraft noise inside eligible homes in close proximity to the Airport by replacing windows and doors as well as other modifications needed to achieve the desired noise level reduction. As of September 2009, 460 homes and 216 apartment units had been treated as part of the RATP, which is being funded in large part by the FAA using funds set aside for implementing FAR Part 150 programs.

In addition to the RATP, the Aviation Department has implemented other noise abatement projects and/or initiatives, including: a Comprehensive Land Use Study for areas around the Airport; a Noise and Operations Monitoring Systems (NOMS) to collect and compile real-time aircraft noise and flight track data; published guidance to commercial aircraft for voluntary Noise Abatement Departure Procedures (NADPs); construction of a GRE for performing aircraft maintenance engine checks with minimal disturbance to nearby communities; an Airport Awareness Zone surrounding the Airport that requires all development and zoning changes to be reviewed by the Aviation Department to help maintain compatible land uses; and an Airport Noise Mitigation Office staffed by the Aviation Department that is responsible for implementing SAT's noise compatibility program, responding to questions and complaints about noise, and generally addressing community issues and concerns.

2009 Noise Exposure Map

The existing conditions (2009) NEM is shown on **Figure 2-47**. Noise contours representing day-night average sound level (DNL) 65, 70, and 75 (expressed in A-weighted decibels (dBA) are typically used for airport noise analyses.[3] The contours extend furthest from the airfield to the northwest, southeast, and northeast because of the high percentage of aircraft operations at SAT arriving to Runway 12R, departing from Runway 12R, and departing from Runway 3,

[3] The A-weighted decibel scale most closely approximates the response characteristics of the human ear to sound. The higher the number on the scale, the louder the sound. DNL represents weighted average noise exposure events over a 24-hour period. To account for human sensitivity to noise between the hours of 10 p.m. and 7 a.m., noise events occurring during these hours receive a "penalty" when the DNL is calculated. Each nighttime event is measured as if 10 daytime events occurred.

respectively. The DNL 65 contour extends beyond the Airport boundary and into local neighborhoods in these three directions. The existing conditions (2009) noise exposure impacts are listed in **Table 2-13**.

According to the 2009 FAR Part 150 noise compatibility study, incompatible noise levels decreased between 1999 (the base year for the previous FAR Part 150 study released in 2002) and 2009. The decrease in significant noise exposure was largely attributable to two factors: lower levels of aircraft activity at the Airport and a change in the fleet mix from older, noisier (Stage 2) aircraft to newer quieter (Stage 3) aircraft. Although not shown here, the DNL 65 noise exposure contour encompassed 2,891 acres in 2009, up from 2,717 acres in 1999.

2014 Noise Exposure Map

The future conditions (2014) NEM is shown on **Figure 2-48**. FAR Part 150 requires that a future noise exposure contour be developed based on conditions expected to be in place 5 years into the future, taking into account all reasonable and foreseeable changes at the Airport that may affect noise exposure. According to the 2009 FAR Part 150 study prepared for SAT, future changes include: a 3 percent increase in the average daily number of aircraft operations at the Airport; continuation of the shift toward the use of smaller regional jet aircraft; continued retirement of older, noisier (Stage 3) aircraft; and the extension of Runway 3-21. The future conditions (2014) noise exposure impacts are listed in Table 2-13.

According to the 2009 FAR Part 150 study, incompatible noise levels are expected to decrease even further. The increase in noise that may result from the 3 percent increase in operations by 2014 would be more than offset by the decrease in noise levels as a result of the projected change in the aircraft fleet mix; the 2009 report states that the extension of Runway 3-21 will have no appreciable effect on the size or shape of the noise exposure contours. The DNL 65 noise exposure contour is projected to encompass 2,667 acres in 2014, down from 2,891 in 2009.

An NCP looks 5 years into the future, but an airport master plan has a 20-year planning horizon. Therefore, it is essential that the improvements and changes that could have a long term effect on noise exposure undergo a detailed review during the master planning process.

Figure 2-47: Existing Conditions (2009) Noise Exposure Map

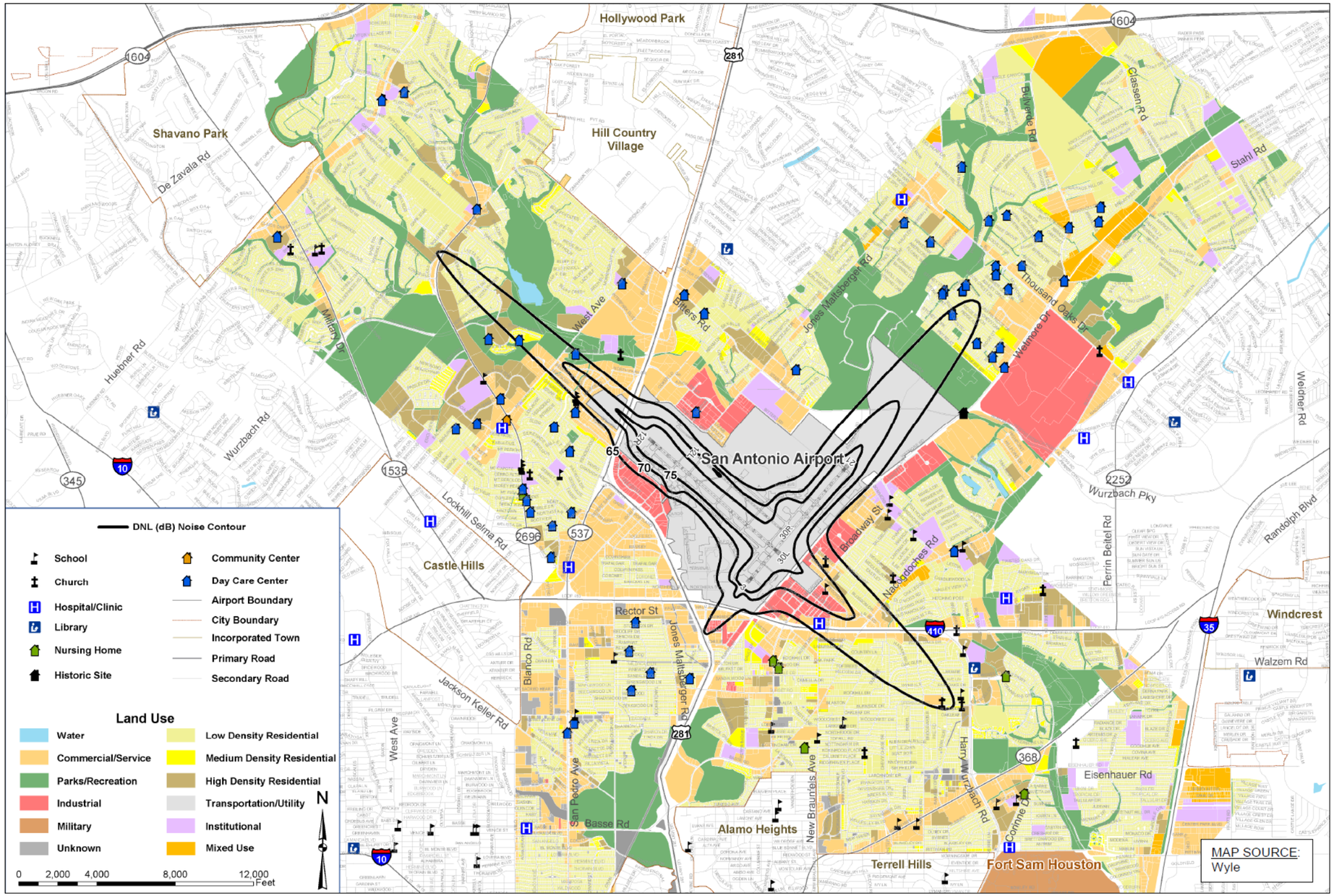
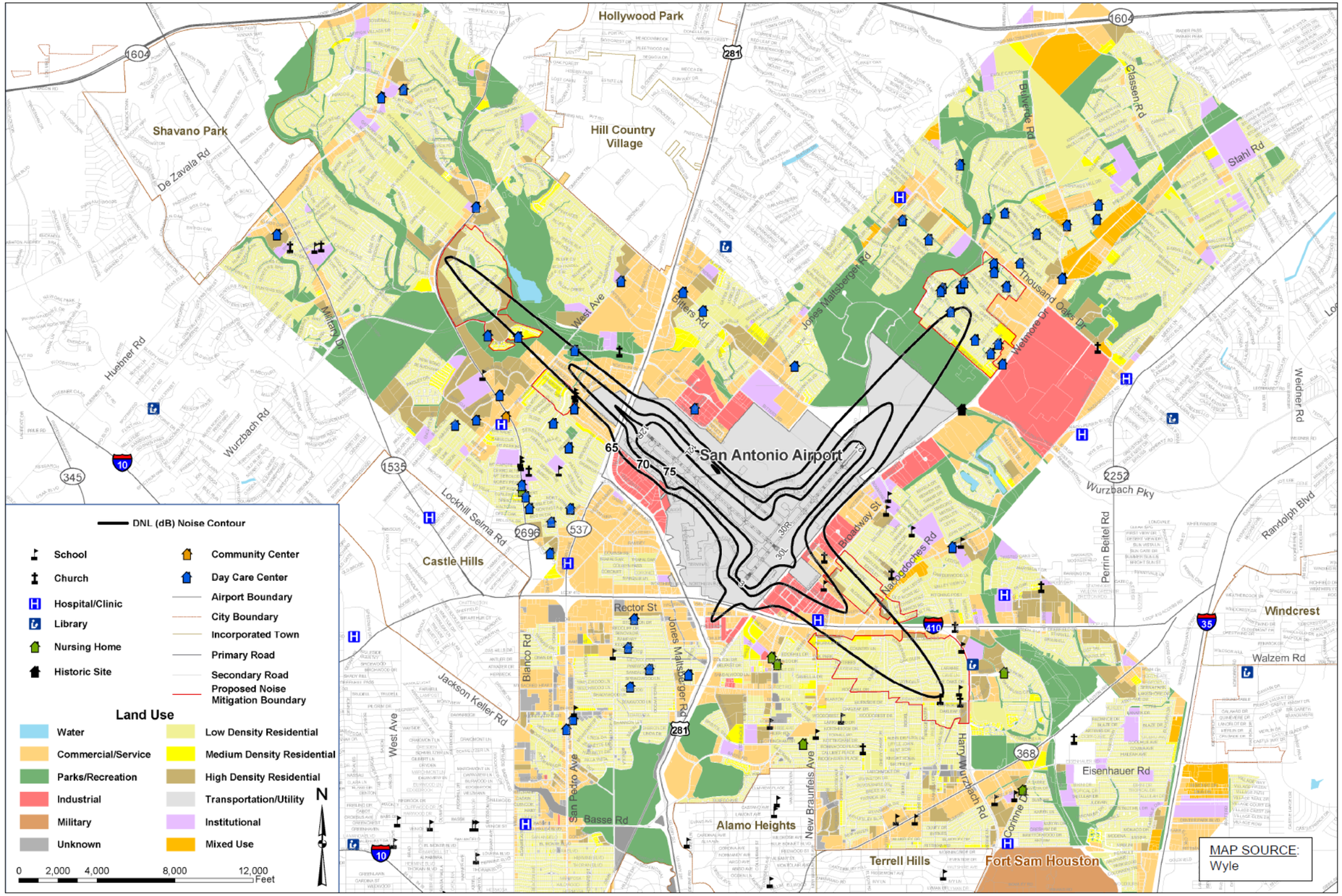


Table 2-13: 2009 and 2014 Noise Exposure Contour Impacts

Category	Existing Conditions (2009) Noise Exposure Impacts					Future Conditions (2014) Noise Exposure Impacts			
	DNL Contour					DNL Contour			
	65 – 70 dBA	70 – 75 dBA	75+ dBA	65+ dBA		65 – 70 dBA	70 – 75 dBA	75+ dBA	65+ dBA
	Land Use Impacts (acres)								
Airport Property	643	550	501	1,694		621	497	500	1,618
Low Density Residential	373	0.1	-	373		335	-	-	335
Commercial Services	263	46	-	309		225	41	-	266
Parks/Recreation	253	0.8	-	254		220	1.4	-	222
Industrial	131	50	-	181		105	43	-	148
High Density Residential	45	4.3	-	49		49	2.1	-	52
Medium Density Residential	31	-	-	31		27	-	-	27
Institutional	>0.3	-	-	>0.3		-	-	-	-
Unknown	>0.1	-	-	>0.1		>0.1	-		>0.1
Total	1,739	651	501	2,891		1,583	584	500	2,667
	Residences/Population								
Residences	2,190	101	0	2,292		2,079	66	0	2,145
Estimated Population	4,543	229	0	4,772		4,293	149	0	4,442
	Noise Sensitive Facilities								
Churches	2	-	-	2		2	-	-	2
Community Service Centers	-	-	-	-		-	-	-	-
Day Care Centers	3	-	-	3		3	-	-	3
Hospitals	1	-	-	1		1	-	-	1
Libraries	-	-	-	-		-	-	-	-
Nursing Homes	-	-	-	-		-	-	-	-
Schools	2	1	-	3		2	1	-	3

Notes: Population figures are derived by determining the percentage of each census block contained within each contour band. Some values and totals are subject to rounding error.
Source: Wyle, Noise Exposure Map Report and Noise Compatibility Program Update for San Antonio International Airport. 2009.

Figure 2-48: Future Conditions (2014) Noise Exposure Map



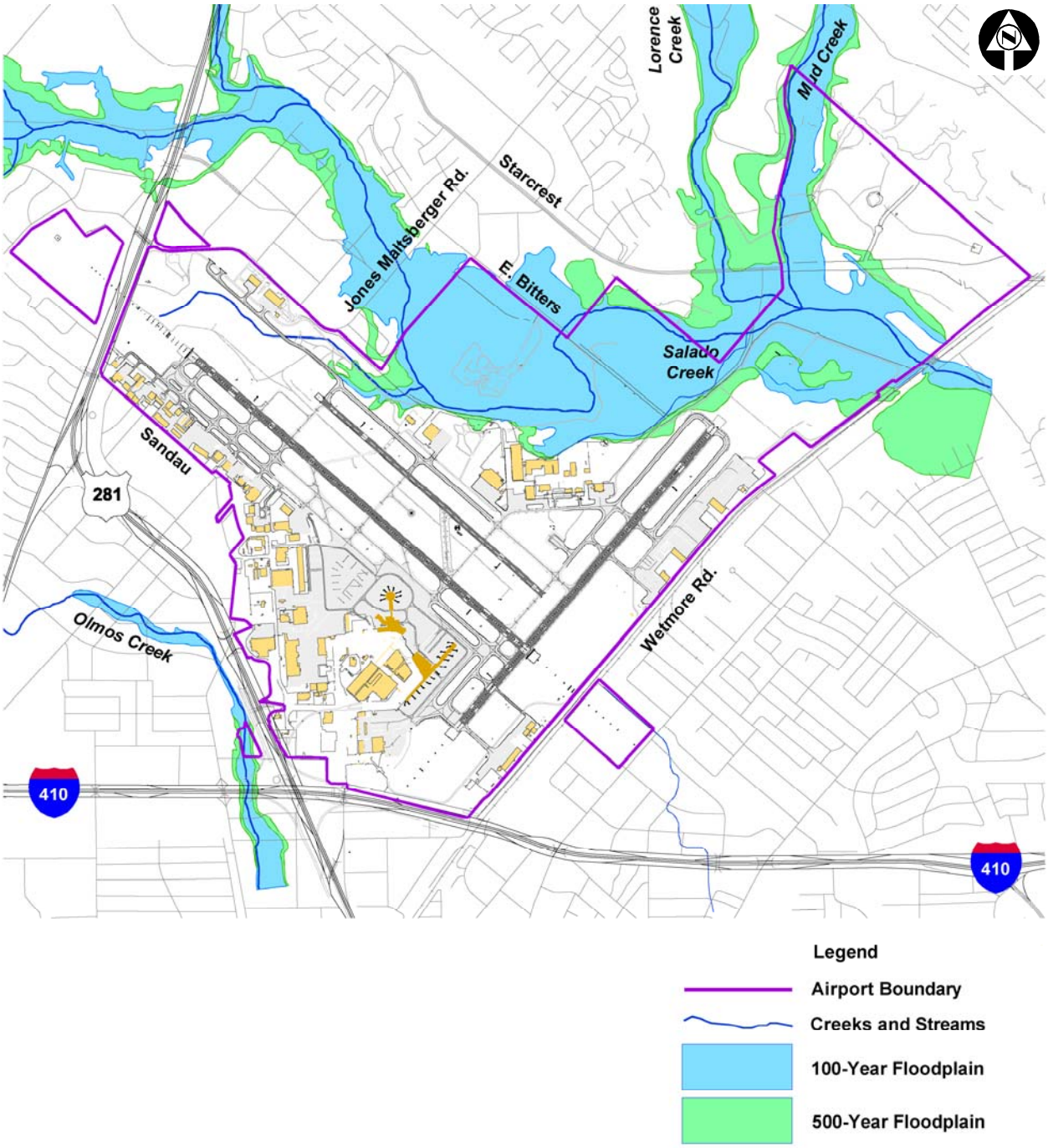
2.4.4 Floodplains

Federal Emergency Management Agency (FEMA) flood hazard mapping indicates where low lying areas would be inundated by a 100-year flood event. As shown in **Figure 2-49**, approximately 290 acres of existing airport property are located within a 100-year floodplain boundary that is associated with Salado Creek and its tributaries. The 100-year floodplain boundary is the FEMA-designated Special Flood Hazard Area, which is the area where the National Flood Insurance Program (NFIP) floodplain management regulations must be enforced and the area in which the mandatory purchase of flood insurance applies.

According to FAA requirements for implementing NEPA, under Executive Order 11988, *Floodplains*, and U.S. Department of Transportation (DOT) Order 5650.2, *Floodplain Management and Protection*, all airport development actions must avoid floodplains to the extent practicable. If significant encroachment on the floodplain cannot be avoided, no further action can be taken until the FAA issues a federal finding that the proposed significant encroachment is the only practicable alternative and that the proposed action complies with applicable state and/or local floodplain standards.

Bexar County participates in the NFIP. Therefore, any revisions to the 100-year floodplain boundary as a result of proposed development at SAT must be approved by FEMA. The process requires preparation of a flood hazard evaluation to be submitted to the Floodplain Administrator, in this case, the City of San Antonio, and endorsed by the City before the evaluation can be forwarded to FEMA for review and approval. A flood hazard evaluation is a professional assessment of all possible flooding hazards and a report of the risks associated with potential flooding.

Figure 2-49: Flood Hazard Areas



2.4.5 Hazardous Materials and Waste Sites

According to FAA guidelines, the Airport should, to the extent possible, avoid encroaching upon hazardous waste sites and environmentally contaminated property. If avoidance is not possible, projects should be designed to minimize the use of contaminated property as much as possible. Doing so lessens the potentially excessive cleanup costs and legal liabilities.

Hazardous Waste Sites and Other Contaminated Areas

There are no federally listed EPA Superfund sites, and no equivalent Texas Superfund sites at or near the Airport. According to the EPA's National Priorities List (NPL), two federally listed EPA Superfund cleanup sites are located in Bexar County. The Bandera Road Groundwater Plume site is located 8.5 miles west-southwest of SAT, and the R&H Oil/Tropicana Energy site is located 11.5 miles south-southwest of SAT. A review of the Texas Superfund list, as provided by TCEQ, has revealed the location of eight State-equivalent Superfund sites in Bexar County, the nearest being 8 miles south of the Airport.

TCEQ maintains a database of reported leaking petroleum storage tanks (LPSTs) and corrective action response forms. A review of the LPST list revealed 18 LPST sites along the Airport's western boundary and one LPST site in the north central portion of the Airport. In most instances, the responsible parties are commercial and industrial tenants on the Airport and their cases have been closed. There are no known significant concerns at SAT with respect to LPSTs.

One industrial site adjacent to the Airport has been an ongoing concern. The Green Light Company packages fertilizers and pesticides for home and garden use and has a reported history of illicit discharges of hazardous substances dating back to 1981. Many hazardous substances have been observed on the property, including chlordane, ethyl benzene, and xylene. In 1987, the predecessor agency to TCEQ ordered the company to clean up onsite contamination of chlordane. Remediation ensued and case closure was granted. Subsequently, subsurface migration of the substance has been detected and the case has been revisited. Contamination has migrated onto Airport property and is being investigated under the Texas Voluntary Cleanup Program. No institutional controls are in place at this time; however, the ongoing investigation could lead to further remedial actions and possible land use restrictions.

Landfills and Other Solid Waste Facilities

A desktop survey of State and local government sources indicates that four municipal solid waste management facilities are located on Airport property and another 10 municipal solid waste facilities are located nearby (as listed in **Table 2-14** and shown on **Figure 2-50**). All but two of these facilities are closed or abandoned landfills. The City's Solid Waste Management Division is carefully managing four closed on-Airport landfills:

- Wetmore Road Landfill (P634)
- Bitters Brush and Recycling Site (P635)
- Joint Cities (P505)
- East Nakoma Drive at Warfield Street (U110)

The Wetmore Road Landfill is a closed municipal solid waste landfill. According to recent reports, putrecible wastes were encountered during an archaeological and cultural resources survey in the area.[4] Putrecible wastes are solid wastes that contain organic matter capable of being decomposed by micro-organisms and thus cause noxious odors and/or food for birds and animals. It was also reported that the landfill is unlined, allowing the potential for leaching into other areas. The City of San Antonio – Bitter's Brush Recycling Center is an active vegetation shredding/grinding facility situated atop a closed landfill known as the Bitters Shredding Site. This landfill contains buried wastes, including brush and yard waste, construction and demolition debris, and other nonputrescible wastes. The Joint Cities landfill is a former municipal solid waste landfill opened in 1969 and closed in 1990. Nakoma Drive at Warfield Street is a closed landfill that was identified in a 1968 U.S. Health Department survey; it was unpermitted.

Additionally, in the vicinity of the Airport is a municipal solid waste transfer station owned/operated by Texas Disposal Systems, which owns/operates a municipal solid waste landfill near Austin. No active municipal solid waste landfill units are located within 5 miles of the Airport. Two commercially operated landfills serve the San Antonio area: the Tessman Road Landfill located 8 miles southeast of SAT and the Covel Gardens landfill located 16 miles southwest of SAT. There are no known applications for new municipal solid waste facilities near SAT. When new or expanded municipal solid waste landfills are being proposed near airports, landfill operators must notify the airport operator and the FAA of the proposal as early as possible pursuant to 40 Code of Federal Regulations (CFR) 258, *Criteria for Municipal Solid Waste Landfills*, Section 258.10, "Airport Safety."

Not mentioned above is a small unlisted landfill unit (5,800 square feet) that was recently encountered on the Airport north of Runway 12L between Skyplace Boulevard, Cessna Drive, and Taxiway R. A geotechnical investigation found an estimated 1,500 cubic yards of buried municipal solid waste from 26 to 33 feet below ground surface within the confines of a pit identifiable on 1966 aerial photography.[5] Remedial activities are under way prior to construction of a new hangar.

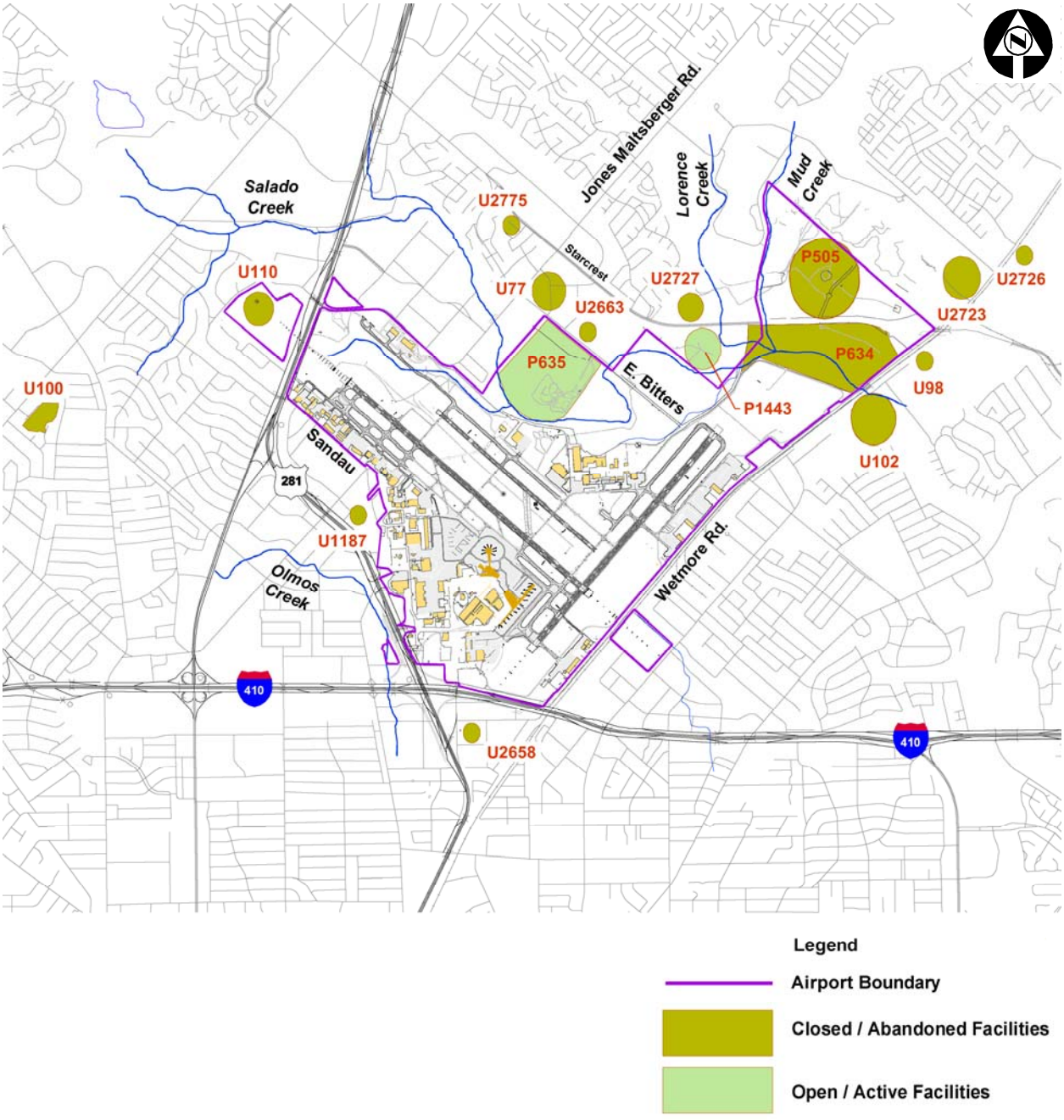
[4] Booz | Allen | Hamilton, *Final Environmental Assessment for Proposed Actions at San Antonio International Airport*. September 2007.
[5] McGookey/DeBarros, 2008.

Table 2-14: Landfills and Other Solid Waste Facilities

On/Off Airport	Site ID	Name	TCEQ Permitted / Authorized	Size (acres)[1]	Current Status	Current Land Owner	Current Land Use
On-Airport	P634	Wetmore Road Landfill	Yes/Type 1[2]	67	Closed	City of San Antonio	Vacant
	P635	Bitters Shredding Site	Yes/Type 5SG[3]	118	Active	City of San Antonio	Recycling Center[4]
	P505	Joint Cities LRB Landfill	Yes/Type 1[2]	95	Closed	City of San Antonio	Vacant/Park
	U110	Nakoma Drive at Warfield Drive	No/Unauthorized	15	Closed	City of San Antonio	Vacant
Off-Airport	P1443	Transfer Station	Yes/Type 5TS[5]	20	Active	City of San Antonio	Municipal Solid Waste Facility
	U77	Bitters Road Landfill #1	No/Unauthorized	20	Closed	NE Independent School District	Commercial
	U98	J W Hill & Sons	No/Unauthorized	5	Closed	Crestmore, Inc.	Vacant[6]
	U100	West Avenue Landfill	No/Unauthorized	10	Closed	King-O-Hills Development Co.	Vacant
	U102	Lamar-Turner	No/Unauthorized	35	Closed	Omega-Watch Holdings LP	Commercial (F1)
	U1187	Union Square	No/Unauthorized	5	Closed	ZML Union Square Ltd	Commercial (F1)[6]
	U2663	Longhorn #1	No/Unauthorized	5	Closed	NE Independent School District	Commercial
	U2568	Hallmark/Airport	No/Unauthorized	5	Closed	James F. Dunworth	Commercial
	U2727	Longhorn 86	No/Unauthorized	11	Closed	City of San Antonio	Vacant
	U2775	Starcrest Drive	No/Unauthorized	5	Closed	Hampton North Associates	Residential/B1

[1] If the size of the landfill is unknown, then it is mapped at 5 acres (Alamo Area Council of Governments).
[2] Standard landfill for the disposal of municipal solid waste (30 Texas Administrative Code (TAC) § 330.41(b)).
[3] Shredding/grinding facility (30 TAC § 330.41(f)).
[4] Landfill closed in 1971; converted to a brush burning site in 1968 and a brush shredding site in 1986.
[5] Solid waste transfer station (30 TAC § 330.41(f)).
[6] Use restrictions may apply.

Figure 2-50: Municipal Solid Waste Facilities



2.4.6 Water Quality

Surface water infrastructure on the Airport collect and convey stormwater runoff toward downstream receiving waters. Federal, State, and local laws and regulations apply to any project or activity that has the potential to affect the quality and quantity of water resources, surface and subsurface.

Surface Water

The Airport is located in the San Antonio River Basin, which drains the greater metropolitan area and outlying areas and eventually discharges into the San Antonio Bay via the San Antonio River. The San Antonio River is a major waterway that originates in central Texas near San Antonio and follows a roughly southeastern path through the State. It eventually feeds into the Guadalupe River about 10 miles from San Antonio Bay on the Gulf of Mexico.

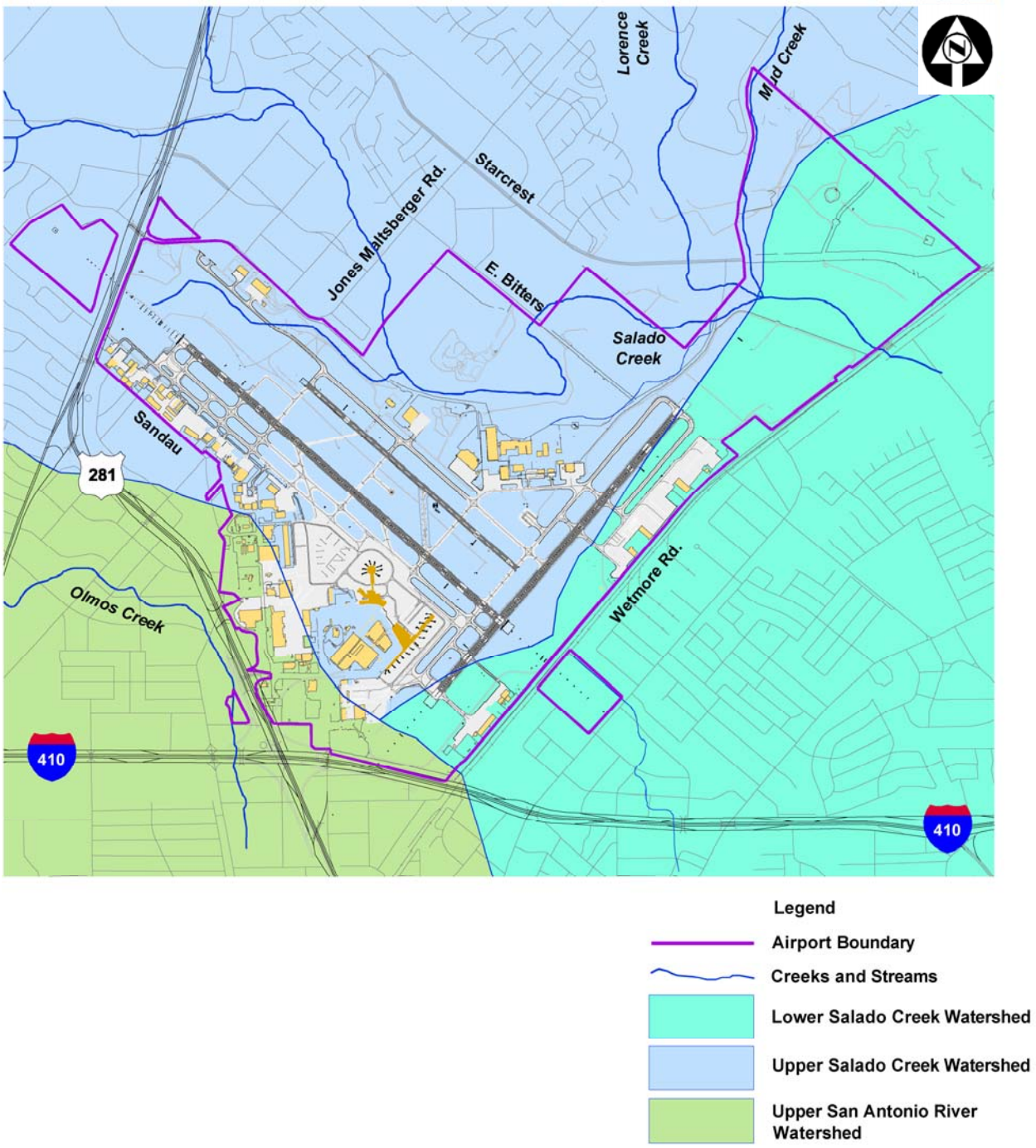
As shown on **Figure 2-51**, the Airport is located on the watershed divide between Upper Salado Creek to the north, Lower Salado Creek to the east, and the Upper San Antonio River to the south and west. Three named streams meander through the north side of the Airport: Salado Creek and its tributaries, Lorence Creek, and Mud Creek. Previous studies indicate that these ephemeral streams are designated "waters of the U.S." and therefore fall under the jurisdiction of the U.S. Army Corps of Engineers. On the south side of the Airport, Olmos Creek crosses a small landlocked parcel of Airport property west of U.S. 281. No other water bodies are located on Airport property.

Except for the south side of the terminal area complex, stormwater runoff from the Airport generally flows north and east toward Salado Creek. Drainage at the Airport is dominated by the Salado Creek floodway and surrounding floodplains. Stormwater runoff from the parking areas generally flows south toward Olmos Creek. Except for a small parcel of Airport property located west of U.S. 281, the Olmos Creek floodway and surrounding floodplain is located off Airport property.

To the extent that future development and operation of the Airport may affect these water resources, water quality impacts need to be addressed. For example, to conduct dredge or fill activities within navigable waters of the U.S., the Army Corps of Engineers must issue a Clean Water Act (CWA) Section 404 permit authorizing those activities. Concurrently, TCEQ conducts CWA Section 401 certification reviews of projects requiring a Section 404 permit. In addition to dredge and fill restrictions, a National Pollutant Discharge Elimination System (NPDES) permit is required for point source discharges into waters of the U.S. In Texas, TCEQ implements the NPDES program.

For any project requiring a Section 404 permit, the FAA must coordinate with the U.S. FWS and the applicable State agency to identify means to prevent loss or damage to wildlife resources resulting from the project. If significant encroachment on a base floodplain cannot be avoided, a flood hazard evaluation must be prepared, floodplain management regulations must be enforced, and flood insurance must be purchased to protect property owners from the financial risks associated with flood-related damage.

Figure 2-51: Watersheds and Streams



Stormwater Permits

Stormwater from the Airport is discharged under a Multi-Sector General Permit Issued by the TCEQ, as the delegated administrator of the Texas Pollutant Discharge Elimination System (TPDES). All Airport businesses with a Standard Industrial Code (SIC) must file a notice of intent to manage stormwater under the Airport's Storm Water Pollution Prevention Plan, or under their own plans. All users of anti-icing or deicing fluid must cooperate in the recapture of such fluid in accordance with the soon to be published U.S. EPA effluent limitation guidelines.

Groundwater

The Edwards Aquifer is the primary source of potable water in the San Antonio area. The San Antonio Water System receives most of its potable water supplied to customers from 92 wells drilled into the aquifer. Average daily pumpage is 136.5 million gallons per day. The aquifer receives most of its water from a contributing zone and a recharge zone - both of which are located north and west of the Airport and are regulated by the U.S. EPA and TCEQ.

As shown on **Figure 2-52**, the Airport is located on the border between the transition zone and the artesian zone. In this area, the Edwards Aquifer is confined between two relatively impermeable formations - the Glen Rose formation below and the Del Rio clay on top. The Del Rio clay is mostly continuous throughout the San Antonio region and provides a natural protective layer between land uses on the surface and drinking water resources below.

The presence of the Edwards Aquifer has not been a major issue or concern in terms of Airport planning, development, or operation. Federal laws and regulations protect sole source aquifers. Under the Safe Drinking Water Act, the FAA must consult with the U.S. EPA regarding any airport project or activity that could contaminate the aquifer below. The City of San Antonio has an overlay district - the Edwards Recharge Zone District (ERZD) - that restricts certain land uses over the Edwards Aquifer recharge zone; as the Airport is not located within the ERZD, those restrictions do not apply.

Figure 2-52: Aquifer Transition/Artesian Zones